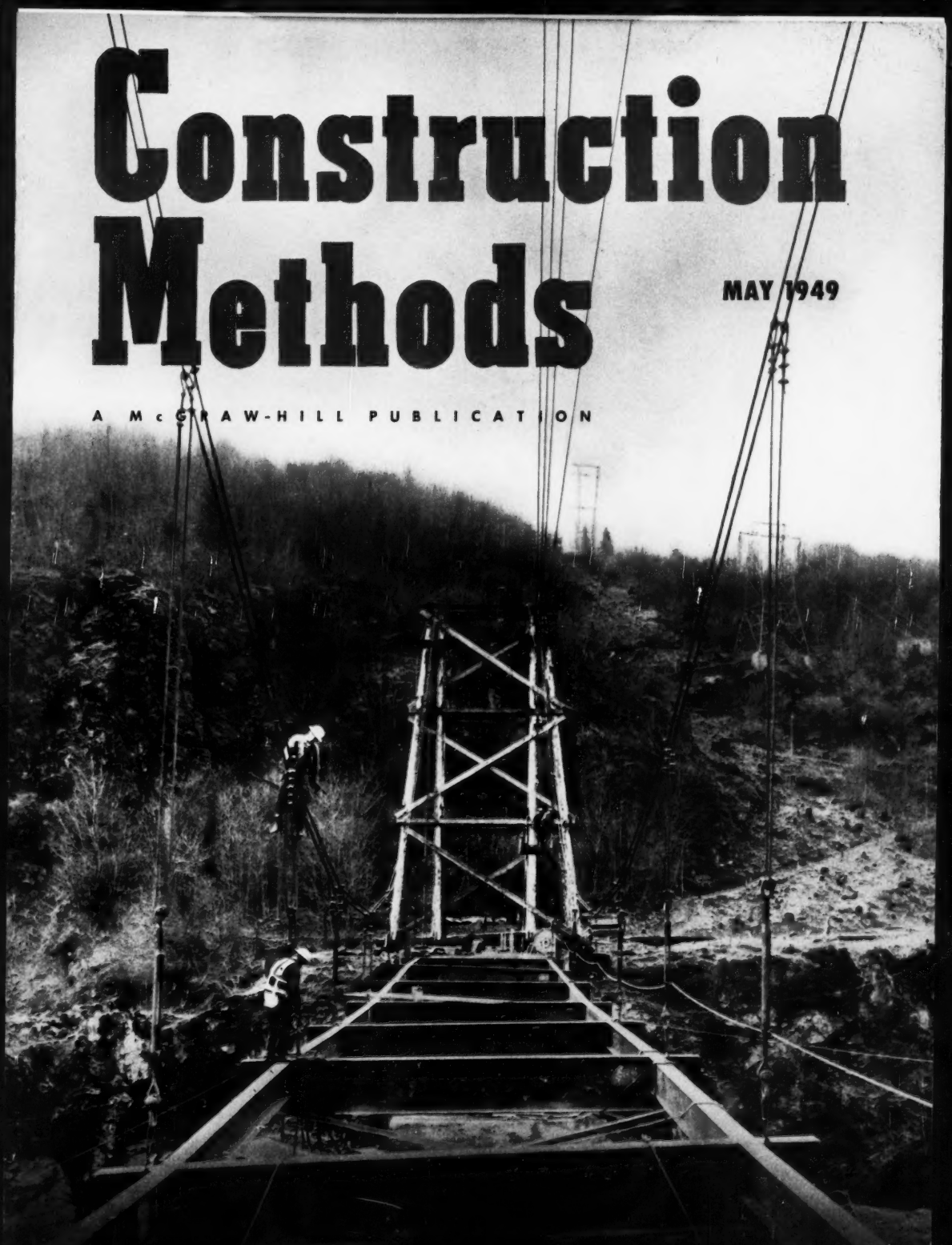
Construction Methods

MAY 1949

A McGRAW-HILL PUBLICATION

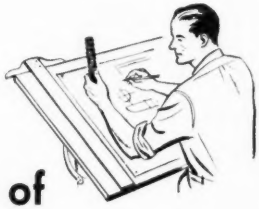


SKYHOOK SUSPENSION CABLES ELIMINATE FALSEWORK ON ERECTION OF LEWIS RIVER BRIDGE IN WASHINGTON.

Architect's drawing of the new Portland Cement Association Research and Development Laboratory being constructed at Skokie, Ill. Carr and Wright, architects; Turner Construction Co., general contractors.

HI-BOND

used exclusively for new research laboratory of Portland Cement Association



In this new laboratory of the Portland Cement Association, the entire building, including exterior walls, will be constructed of reinforced concrete . . . with Inland HI-BOND reinforcing bars used throughout.

Once again HI-BOND was recognized to be a better reinforcing bar because of its proven superior bonding strength, due to closely spaced, deeply corrugated, reversed helical ribs. This unique design improves the transfer of stresses between steel and concrete, making possible more economical, better-looking, longer-lasting structures.

While current demand for HI-BOND is still strong, we are striving to satisfy the requirements of the construction industry, and have licensed other steel companies to make this superior bar. Write for bulletin. INLAND STEEL CO., 38 S. Dearborn St., Chicago 3, Illinois. Sales Offices: Chicago, Davenport, Detroit, Indianapolis, Kansas City, Milwaukee, New York, St. Louis, St. Paul.

INLAND STEEL

INLAND **HI-BOND**

Reg. U. S. Pat. Off.

The Reinforcing Bar with the "BUILT-IN" ANCHORAGE!

OTHER PRODUCTS: BARS • STRUCTURALS • PLATES • SHEETS • STRIP • TIN PLATE • FLOOR PLATE • PILING • RAILS • TRACK ACCESSORIES

B. F. Goodrich announces new all-nylon tire

Now B. F. Goodrich announces an all-nylon tire for off-the-road service. Again B. F. Goodrich is first with a money-saving development.

Nylon is extra strong and elastic. Size for size, nylon cord is twice as strong as other cord. Since the new BFG nylon tires have the same number of plies as other tires, you can see that cord body strength is greatly increased. These tires have over twice the bruise resistance and many times the flex life of other cord tires.

The new nylon tires (with the tread design shown above) have been tested on some of the toughest operations in the country. In all of the tests, *not a single tire blew out and not one flex break occurred!*

Even with nylon cord B. F. Goodrich uses weftless construction. This means there are no cross-threads; cord tension is controlled and equalized. Tire growth is reduced; tires last longer.

Nylon tires will provide big savings to users on dirt-moving projects, quarry, strip-mining and other operations where heavy loads and rough terrain have made tire costs high.

The new all-nylon construction is typical of the continuous improvements being made in truck tires by B. F. Goodrich. Long ago, BFG engineers developed special types of tires for off-the-road service. They constantly developed new improvements. One of these was the nylon shock shield, a major construction advancement now used in all B. F. Goodrich truck tires with 8 or more plies (double nylon shock shield in large off-the-road tires) —including the new all-nylon tire.

For more information on how B. F. Goodrich nylon tires can do more work for you and save you money, see the BFG dealer or write us direct. Quantities available are limited. *The B. F. Goodrich Company, Akron, Ohio.*

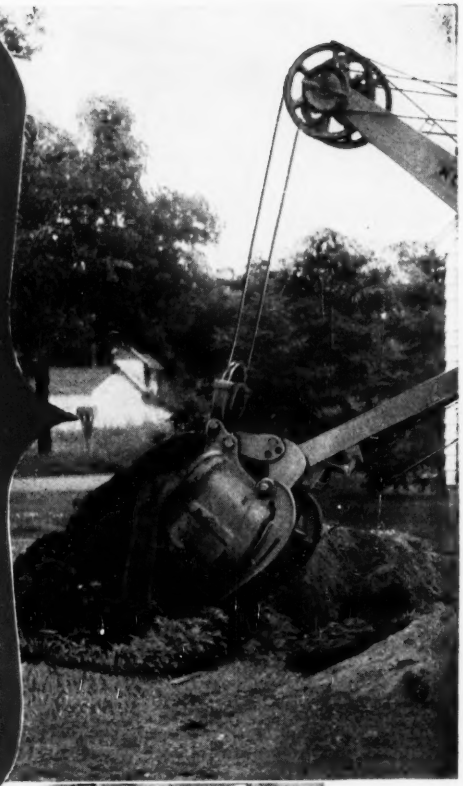
Truck Tires BY

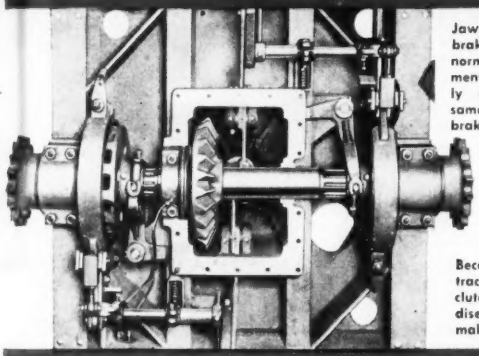
B. F. Goodrich

KOEHRING 205

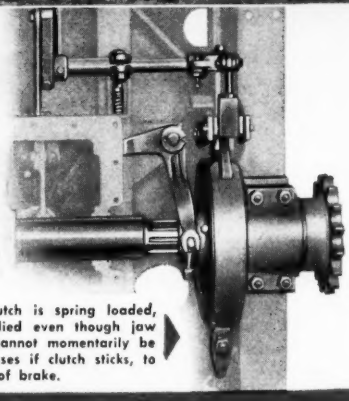
HALF YARD

Works Safely on 30% Grade without Blocking





Jaw clutches and traction brakes work as a team. In normal operation, engagement of brake automatically disengages clutch for same crawler. Applying both brakes locks 205 securely for all operations.



Because linkage to jaw clutch is spring loaded, traction brake can be applied even though jaw clutch is locked tight and cannot momentarily be disengaged. Spring compresses if clutch sticks, to make possible engagement of brake.

HERE'S ANOTHER KOEHRING UNIT THAT WILL SAVE TIME ON YOUR DIRT-MOVING JOBS . . . HEAVY-DUTY DUMPTOR

6-yard Koehring Dumptor has constant-mesh transmission, eliminates delay for shifting gears . . . has three fast forward and reverse speeds, can shuttle from shovel to dump, eliminates turning delays . . . has instantaneous gravity dump, saves 10 to 20 seconds in unloading time every cycle. They're engineered and built to haul tough materials over rough terrain and steep grades . . . are easy to operate . . . simple to maintain . . . will give you less down-time, more work-time. Ask your Koehring distributor for complete Dumptor facts TODAY.

No blocking necessary when you're digging in on basement excavations. Safe traction brakes hold Koehring 205 Half-Yard securely.

Saves Time on Every Job

You can work safely on a 30% grade without blocking crawlers on the Koehring 205 Half-Yard. Crawlers are held by big friction brakes, not by a pawl or jaw lock. These friction brakes provide the flexibility that's necessary to cushion brake assembly against operating shocks. That's why there's no danger of brake damage on the 205. Without blocking you will save time on any job.

Here are other advantages of the Koehring 205 Half-Yard brake and steering system:

Traction brakes can be applied at any time, on any grade. Safety spring in operating linkage lets you apply traction brakes even when traction jaw clutches are locked and cannot be disengaged. Your 205 will never run away from you on the grade.

- By applying power to one crawler, and brake to the other, you can turn in a tight circle, within 205's own length.
- Easy to make wide turns under accurate control.
- Operator never leaves cab to apply traction brakes or to steer. Separate levers in cab control friction brake as well as jaw clutch for independent operation on each crawler.
- Full steering and brake control is available with cab in any position.

Your Koehring distributor can show you many other ways this versatile Half-Yard can save time, money and increase production on your excavating jobs. Ask him, too, for facts and figures on the larger 304, 605 and 1005 excavators.

KOEHRING HEAVY DUTY

KOEHRING COMPANY
Milwaukee 10, Wisconsin

Subsidiaries: JOHNSON • PARSONS • KWIK-MIX

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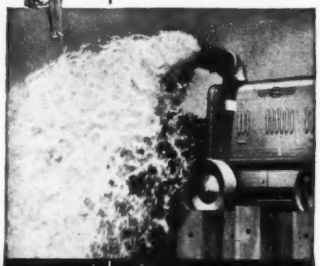

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enclosed-type pumps give you steady high efficiency — longer life

To a better engineered, more amply powered, conservatively rated line of pumps, Jaeger has added all-weather protection of all heavy duty models of 2" to 10" size — for sustained efficiency of pump and engine, extra hours of smooth, dependable performance, plus easy accessibility at all times.

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4" to 10" Portables: Compact, extra powerful units of 40,000 to 240,000 g.p.h. rating and exceptional air capacity.

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Only Jaeger Offers All These

Inherent priming action plus "jet" priming — doubly sure and fast . . . long-life "Lubri-Seal," accessible for inspection . . . self-cleaning shell design . . . replaceable liners or seal rings . . . Every pump tested and certified for performance.

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Construction Methods

ESTABLISHED 1919

Volume 31 — MAY 1949 — Number 5

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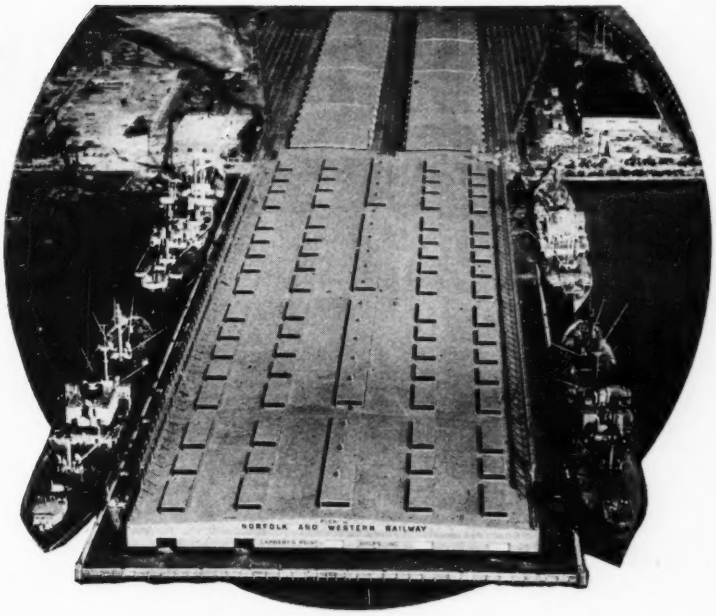
Peer of Piers!

100,000 Barrels of Lone Star Cement used in Norfolk & Western's great new pier, largest of kind on Atlantic Seaboard



THIS great new $6-million pier has ten acres of over-water area. Four large freighters can load or unload at one time. Six tracks serve the pier, two within the shed, and two on each of the 35-ft. aprons on either side. Quality construction matches mechanical efficiency. Nearly 70 miles of concrete piling, cast at job site, support the structure. The pier deck is a 9-in. concrete slab, with drop panels at pile heads and 7-ft.-sq. footings at warehouse columns. Deep concrete girders and beams support center tracks and aprons. *Quality concrete with the durability needed to meet rugged exposure conditions adds a further dimension to the outstanding service for which the Norfolk & Western Railway is noted.*

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"INCOR"
LONE STAR AIR-ENTRAINING PORTLAND CEMENT
LONE STAR MASONRY CEMENT

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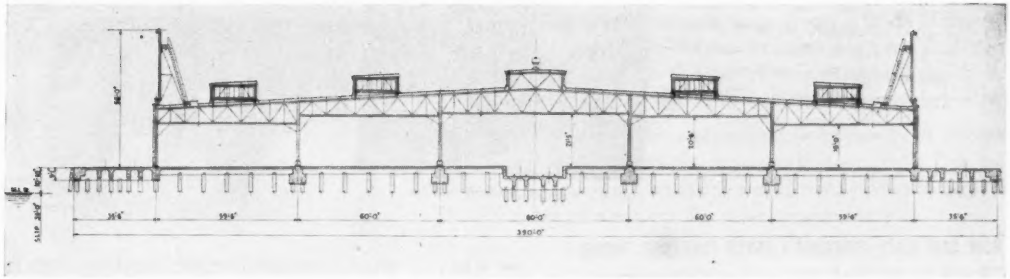
McLEAN CONTRACTING COMPANY, Baltimore

Designed and Supervised by:
ENGINEERING DEPARTMENT, NORFOLK AND WESTERN RAILWAY



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One man can produce to the limit with this Disston One-Man Chain Saw for light felling, bucking, limbing and general needs. Light, easy and safe to handle. Starts sure. Powered to do tough work fast. Cuts at any angle, without adjustment. Proved features include instant, handy controls and automatic chain lubrication. 18", 24" and 30" Guide Rails are quickly interchangeable.

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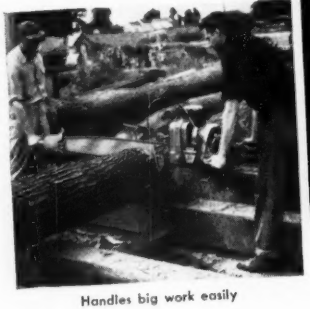

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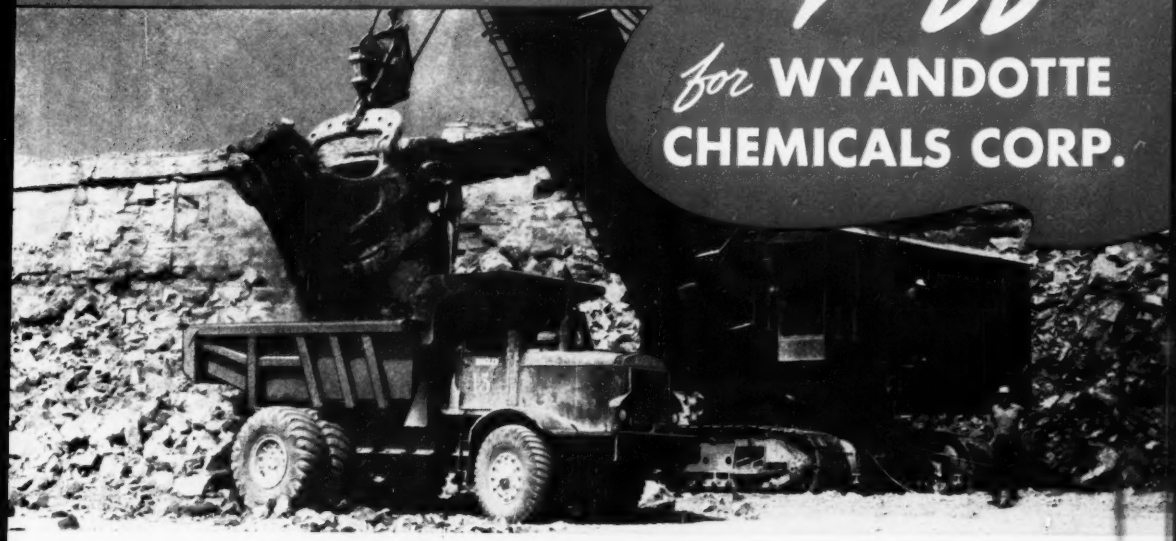

At Alpena, Mich., Wyandotte Chemicals Corporation operates one of the world's largest limestone quarries — another job where "Eucs" are paying off by doing more work at less operating and maintenance cost.

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Wyandotte standardized on Rear-Dump Euclids because of their proved dependability and efficiency in mine and quarry operations. Their large capacity and fast travel speeds have increased production and lowered hauling costs at Alpena.

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Cable Address — YUKLID

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For use with Hystaways mounted *on all* "Caterpillar" D8 and current series D7 track-type tractors

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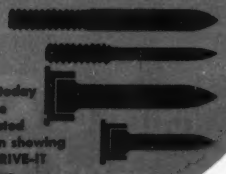

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For the good of your business—

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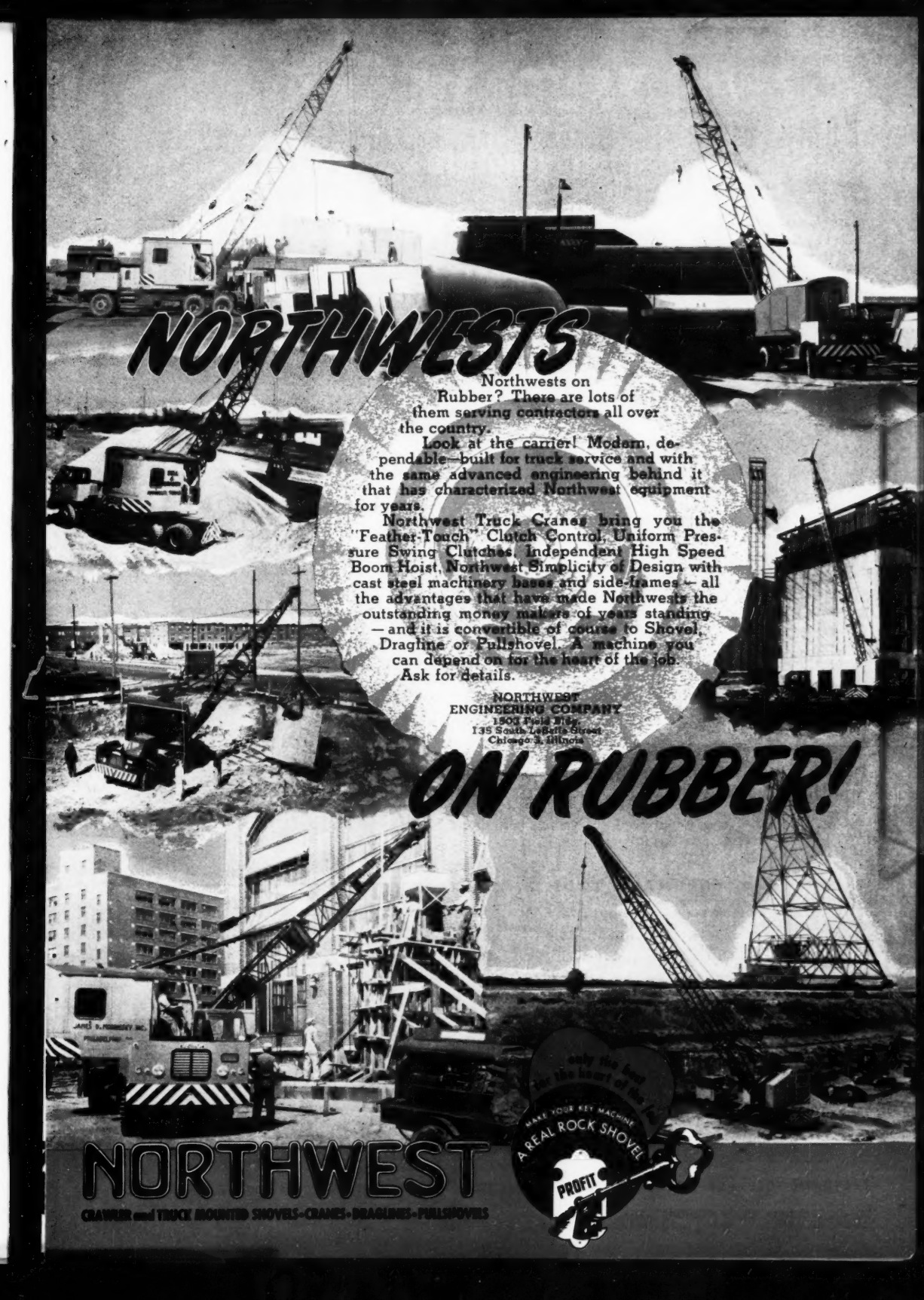
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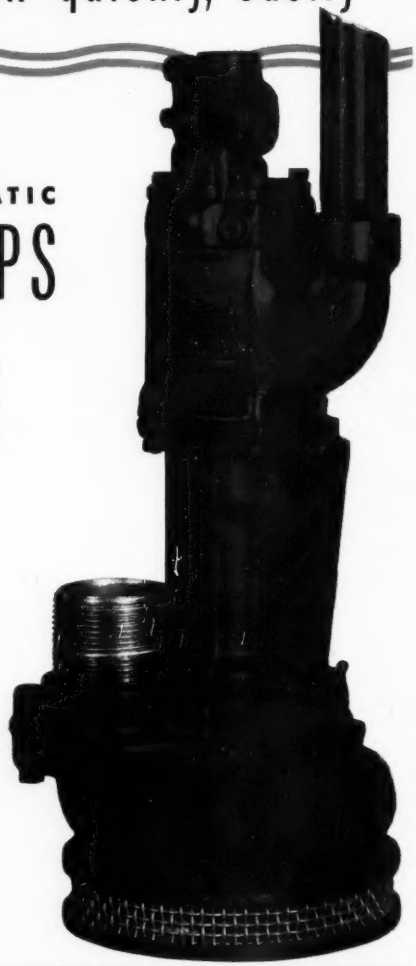

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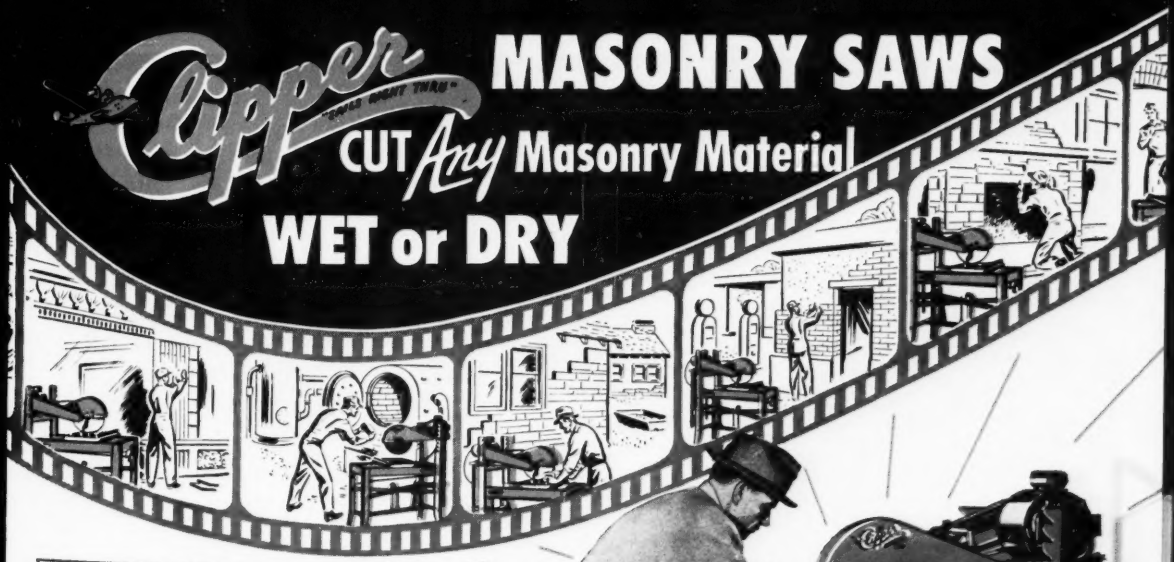
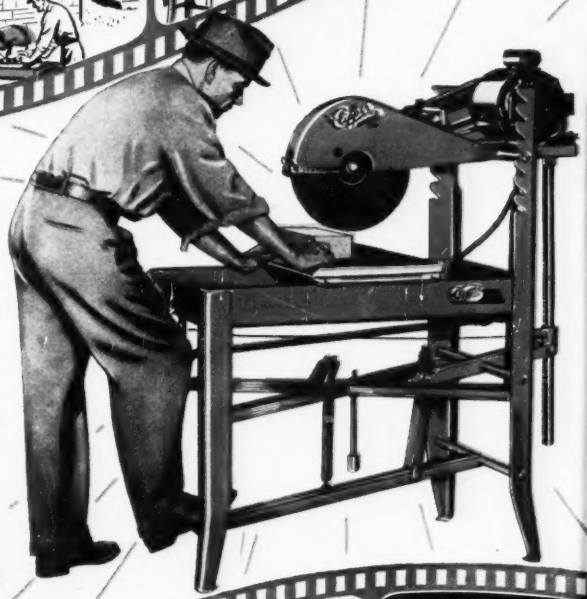
CUT *Any* Masonry Material WET or DRY



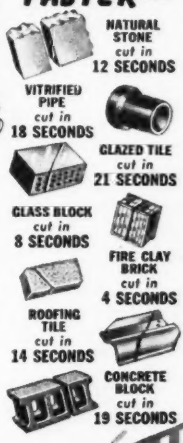


FREE TRIAL

See—yes, and try any of the Nine Clipper Models on your job, before you buy. Shipped on FREE TRIAL direct from your nearest Clipper Factory Branch ... Order Today!

Yes Sir

YOU CAN CUT THESE MATERIALS *FASTER--*



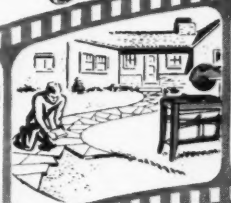
- NATURAL STONE cut in 12 SECONDS
- VITRIFIED PIPE cut in 18 SECONDS
- GLAZED TILE cut in 21 SECONDS
- GLASS BLOCK cut in 8 SECONDS
- FIRE CLAY BRICK cut in 4 SECONDS
- ROOFING TILE cut in 14 SECONDS
- CONCRETE BLOCK cut in 19 SECONDS

ONLY Clipper

HAS *THESE* FEATURES

Only with Clipper do you get that smooth, sensitive cutting performance ... and why ... because your Clipper has the "Multiple Cutting Action", "Adjust-A-Cut" Control, Automatic Blade Pressure Equalizer, and the "Fatigue-Free" Conveyor Cart. Add up these features and you have Clipper—the original masonry saw. Every cut, angle or straight—simple or intricate, is made faster, more economical, and easier with any of the NINE CLIPPER MODELS.

When Dust is a problem choose the Model HD for the DUSTLESS (wet) or dry cutting even next to intricate machinery. Tear off the coupon ... NOW ... for full details on FREE TRIAL.



FOR DUSTLESS CUTTING it's the HD-49 CLIPPER Cuts Wet or Dry

Clipper

NATION-WIDE DIRECT FACTORY SERVICE

MANUFACTURING CO.
KANSAS CITY 8, MISSOURI

Factory Branches

PHILADELPHIA Locust 4-1996 • ST. LOUIS JE-1288 • CLEVELAND CH-7081 • AUSTIN, TEX. 8-1373 • SAN FRANCISCO EX-2-1574

TEAR OFF AND MAIL ... NOW

CLIPPER MANUFACTURING CO.
2809 WARWICK, KANSAS CITY 8, MO.

Send TODAY information on the FREE TRIAL Offer and complete literature and prices on the NINE Clipper Masonry Saws.

NAME _____

COMPANY _____

STREET _____

CITY _____ ZONE _____

STATE _____

SOLD DIRECT... *from Factory to User*

CHASSIS PARTS

MORE THAN 300 MILLION POUNDS OF TEXACO MARFAK HAVE BEEN SOLD!

Tune in . . .
TEXACO STAR THEATRE
presents MILTON BERLE
every Wednesday night.
See newspaper for
time and station.

TEXACO

TEXACO

LAST LONGER

AND maintenance costs come down when you lubricate with long-lasting Texaco Marfak.

HIT IT! Marfak won't splatter like ordinary chassis grease—proof that it stays in the bearings under heavy loads and pounding service.

Heavy loads won't squeeze *Texaco Marfak* out of bearings. Rough service won't jar it out. *Texaco Marfak* seals out dirt and road splash, keeps rust-forming moisture off metal. Bearings get full protection, parts last longer, maintenance costs less.

In wheel bearings, *Texaco Marfak Heavy Duty* is the stay-on-the-job lubricant to use. It seals itself in, seals out dirt, protects against rust. It won't leak onto brakes . . . requires no seasonal re-packing. *Texaco Marfak Heavy Duty* will save you many a wheel bearing replacement . . . sharply reduce your maintenance costs.

The line-up of Texaco lubricants for contractors' equipment also includes *Texaco Ursa Oil X***, designed to keep Diesel and heavy-duty gasoline engines clean . . . and *Texaco Track Roll Lubricant* to give rollers extra protection against dirt and moisture.

Use Texaco's Simplified Lubrication Plan to get better, more economical performance from *all* your equipment. A Texaco Lubrication Engineer will gladly tell you about it. Just call the nearest of the more than 2300 Texaco Wholesale Distributing Plants in the 48 States, or write The Texas Company, 135 East 42nd Street, New York 17, New York.

STRETCH IT! Marfak holds together where ordinary grease comes apart—proof that it can't work out of bearings, gives longer-lasting protection.

RUB IT! See how Marfak liquefies under friction while retaining its tough outer "collar"—proof that it seals itself in, seals out dirt and moisture.

Lubricants and Fuels

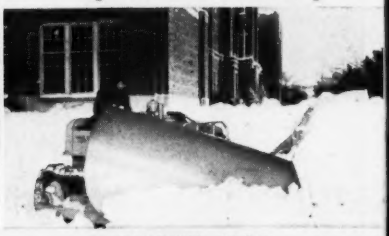
FOR ALL CONTRACTORS' EQUIPMENT

Cut Costs

Not tied down to specialized duty —

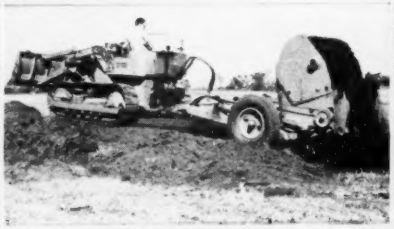
LOADING FROM PIT

LOADING SNOW

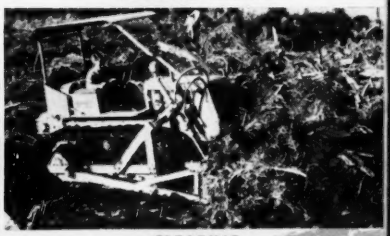


PLOWING SNOW

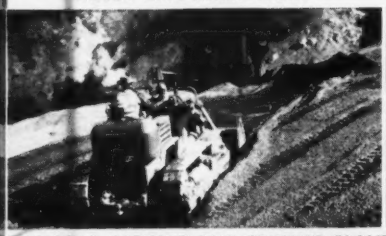
WINCH AND HOIST WORK



PULLING SCRAPERS



CLEARING



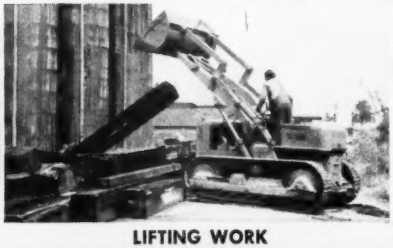
FEEDING ASPHALT AND CRUSHER PLANTS

BUILDING SANITARY FILLS

HANDLING COAL

GRADING HOMESITES

FLOOD CONTROL



LIFTING WORK

A Great Tractor WITH A GREAT ALLIED LINE

Available with fully matched Baker, Gar Wood and Carco bulldozers . . . Drott Skid-Loader . . . Baker snowplow . . . Gar Wood scraper . . . Carco winch . . . Tractomotive Tracto-Shovel with interchangeable attachments—1 cu. yd. standard bucket, ¾ cu. yd. narrow bucket, 2 cu. yd. light materials bucket, 1 cu. yd. rock bucket, teeth for all buckets, heavy-duty bulldozer blades (narrow and wide) and V-type snowplow.

CLEANING BEACHES

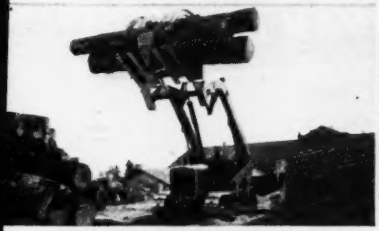
On All Kinds of Work.

WITH THE VERSATILE ALLIS-CHALMERS HD-5

— Yet gives special performance on every job

Completely New IN DESIGN

New Performance . . .
New Work Capacity . . .
New Simplified Servicing
Weighs 11,250 lbs.
Provides 40.26 drawbar hp., 50.25 on belt
2-Cycle GM Diesel Power



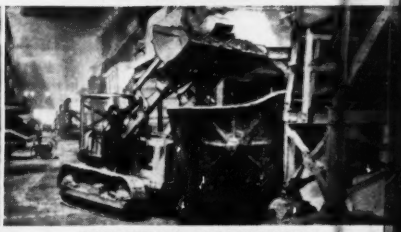
HANDLING TIMBER, LUMBER, ETC.

BACKFILLING

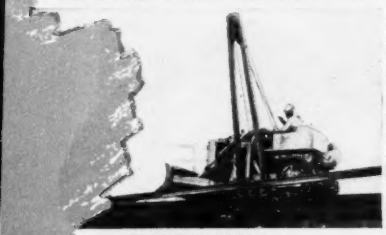
GRADING PARKING LOTS

ROAD AND STREET MAINTENANCE

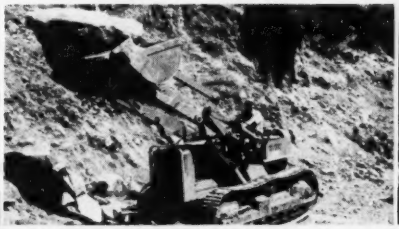
MATERIAL HANDLING



INDUSTRIAL PLANT WORK



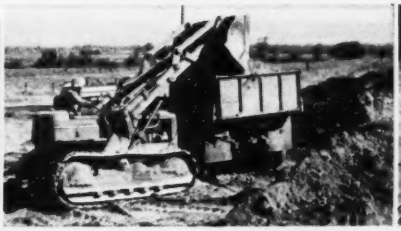
CRANE WORK



LOADING ROCK

TUNNEL AND SUBWAY EXCAVATION

DIGGING BASEMENTS, CULVERTS, ETC.



LANDSCAPING AND STRIPPING

UNDERGROUND MINING

ALLIS-CHALMERS

TRACTOR DIVISION • MILWAUKEE 1, U. S. A.

Our Engineering Department will gladly help you select the right construction of Preformed "HERCULES" (Red-Strand) Wire Rope for your particular equipment.

. . . As a measure of value, nothing can take the place of PERFORMANCE . . . By the use of this accurate yardstick — year after year and under extremely severe working conditions of all kinds — Preformed "HERCULES" (Red Strand) has become recognized as "the Dependable Wire Rope for Any Tough Job". For over 60 years the "Red-Strand" has been a reliable guide to safe and economical wire rope service.

MADE ONLY BY

A. LESCHEN & SONS ROPE CO.

ESTABLISHED 1857

5909 KENNERLY AVENUE • ST. LOUIS 12, MISSOURI

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YOUR COSTS COME DOWN WITH *EVEREADY* BRIKSAW

EVEREADY BRIKSAW — EVEREADY BRIKSAW COMPANY CHICAGO, ILL.

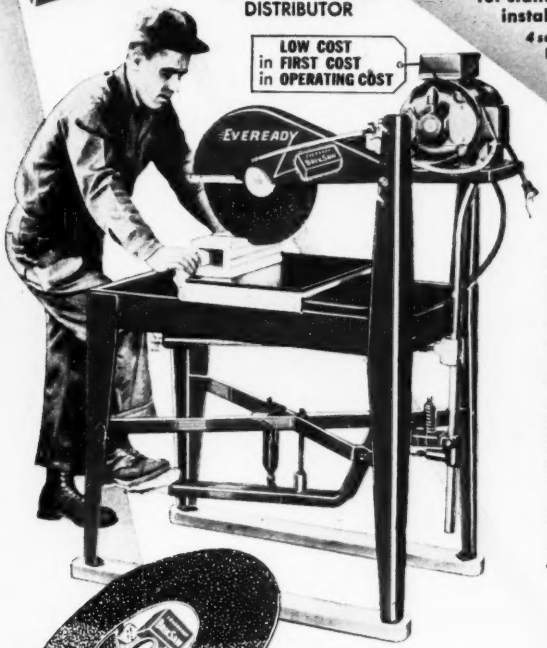
Cut WET or DRY

Now you can have *Dust-Free* masonry cutting *whenever you want it!* Take your choice of EVEREADY BRIKSAW completely equipped—*Or reduce first costs* by buying BRIKSAW for standard dry cutting only—Later install *inexpensive Wet Cutting Kit.*

4 seconds to adjust Cutting Head height! Patented "Adjusta-Height" is that fast. Exclusive "Toe-Matic" Head angularity control lets you make any cut in any size material—FAST! One-piece Cutting Head removed in 21 seconds for portability anywhere.

WRITE FOR NAME OF NEAREST DISTRIBUTOR

LOW COST in FIRST COST in OPERATING COST



ANY CUTTING POSITION

With *effortless speed* you shift the Cutting Head from one "Adjusta-Height" Notch to another to cut: Quarry Tile—Brick—Partition Tile—Concrete Block.

AUTOMATIC BLADE PRESSURE

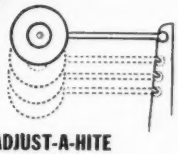
Longer blade life, faster cutting with patented Blade Pressure Equalizer Spring that ***automatically adjusts*** blade cutting pressure.

INSTANT "HEAD LOCK"

A few turns of the handle ***locks head in a fixed position.***

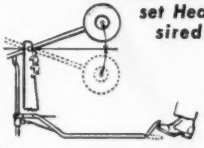
EXCLUSIVE "TOE-MATIC"

A light upward tilt of the Foot Treadle—and you ***set Head to any desired angularity.***



ADJUST-A-HITE CONTROL

In 4 seconds adjust Head-height for Quarry Tile—Brick—Glazed Tile—Concrete Block.



TOE-MATIC FOOT TREADLE

Lift up with tip of toe to adjust Head—Then press down to cut.

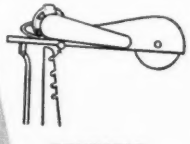
EVEREADY BRIKSAW BLADES

For every masonry material—from Bricks to Porcelain; from Glazed Tile to Concrete Blocks—there is an EVEREADY BRIKSAW Blade (Abrasive or Diamond) to give *top cutting performance* WET or DRY.

On almost every masonry material, operator has HIS choice of these different cutting actions:

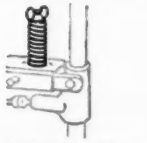
1. *Standard Cutting Speed—standard blade life.* 2. *Faster Cutting Speed*—somewhat shorter blade life. 3. *Longer Blade Life*—somewhat slower cutting speed.

Remember: There is an EVEREADY BRIKSAW Blade for *any and every type of masonry cutting!*



PORTABLE

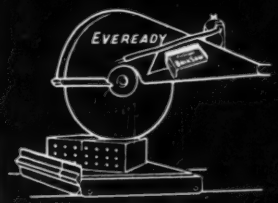
In 21 seconds remove one-piece Cutting Head for ready portability.



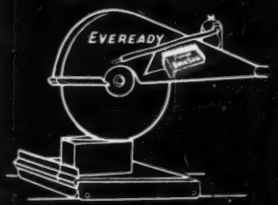
BLADE PRESSURE EQUALIZER SPRING

Automatically adjusts blade pressure—Longer blade life, faster cutting.

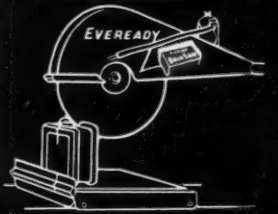
SIGN AND MAIL NOW



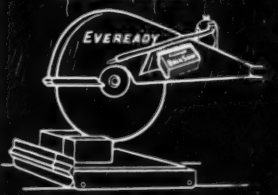
CUT GLAZED TILE IN 21 SECONDS



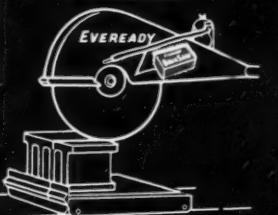
CUT FACE BRICK IN 11 SECONDS



CUT GLASS BLOCK IN 8 SECONDS



CUT FIRE BRICK IN 4 SECONDS



CUT CONCRETE BLOCK IN 19 SECONDS

EVEREADY BRIKSAW COMPANY
1511 S. Michigan Boulevard, Chicago 5, Illinois

Without obligation send information on EVEREADY BRIKSAW and Blades for cutting:

NAME _____

STREET _____

CITY _____ STATE _____

EVEREADY BRIKSAW COMPANY

1511 S. MICHIGAN BLVD. CHICAGO 5, ILLINOIS Cable Address: Briksaw, Chicago, Ill.

FOR FAST and EASY DRILLING

Providing fast and easy operation of the more powerful CP drifter drills, the lightweight G-200R WAGON DRILL greatly reduces drilling costs.

It will drill holes at any angle, and the sliding cone, with a 36-inch adjustment, offsets ground irregularities or uneven steel lengths. Its CP rotary air motor gives a steady feed and quick return, with ample power for pulling tight steel.

Because of the flexibility of its mounting, the Wagon Drill can be quickly adjusted for toe-hole drilling or bench drilling. For line drilling, or drilling close to the face, the carriage wheels can be turned at right angles.

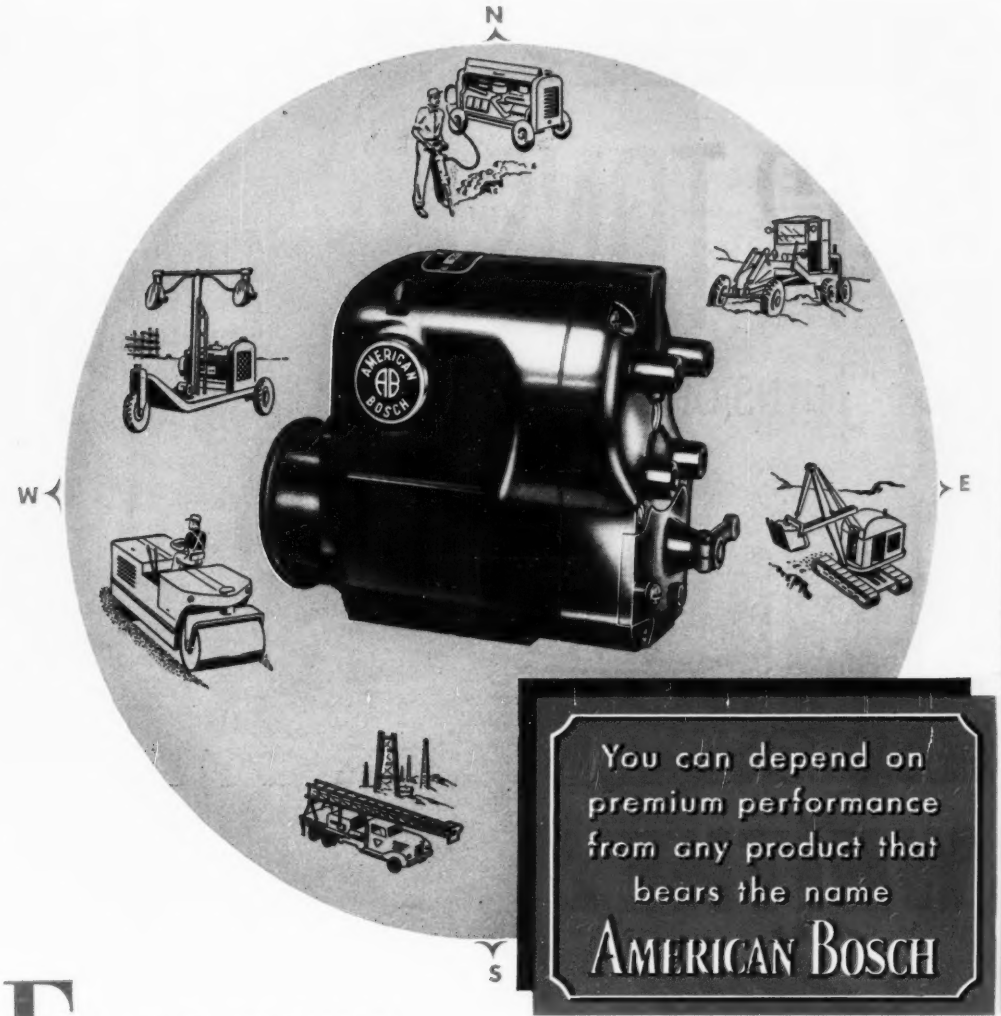
Its three roller-bearing wheels, equipped with pneumatic tires, insure ease of movement however rough the ground. The main frame, uprights and mounting are of seamless steel tubing, providing maximum strength per pound of weight.

Write for complete information.

The G-200R WAGON DRILL is available with CP-50N (3"), CP-60N (3½"), or CP-70 (4") Drifters.

CHICAGO PNEUMATIC TOOL COMPANY
General Offices: 8 East 44th Street, New York 17, N. Y.

PNEUMATIC TOOLS • AIR COMPRESSORS • ELECTRIC TOOLS • DIESEL ENGINES
ROCK DRILLS • HYDRAULIC TOOLS • VACUUM PUMPS • AVIATION ACCESSORIES



FAMOUS everywhere for premium performance

Wherever ignition failure is too costly to risk . . . wherever operating conditions are extra tough — there you'll find American Bosch *super-powered* magnetos are prime favorites. Backed by years of automotive electrical research and development; these precision, power-packed units bring the utmost in dependable performance. It will pay you to standardize on American Bosch Magnetos for your equipment as so many large users have done — see for yourself why these famous magnetos have long been first choice for America's commercial and industrial engines.

Skillfully designed with a minimum number of moving parts

•

Ruggedly built for extreme dependability

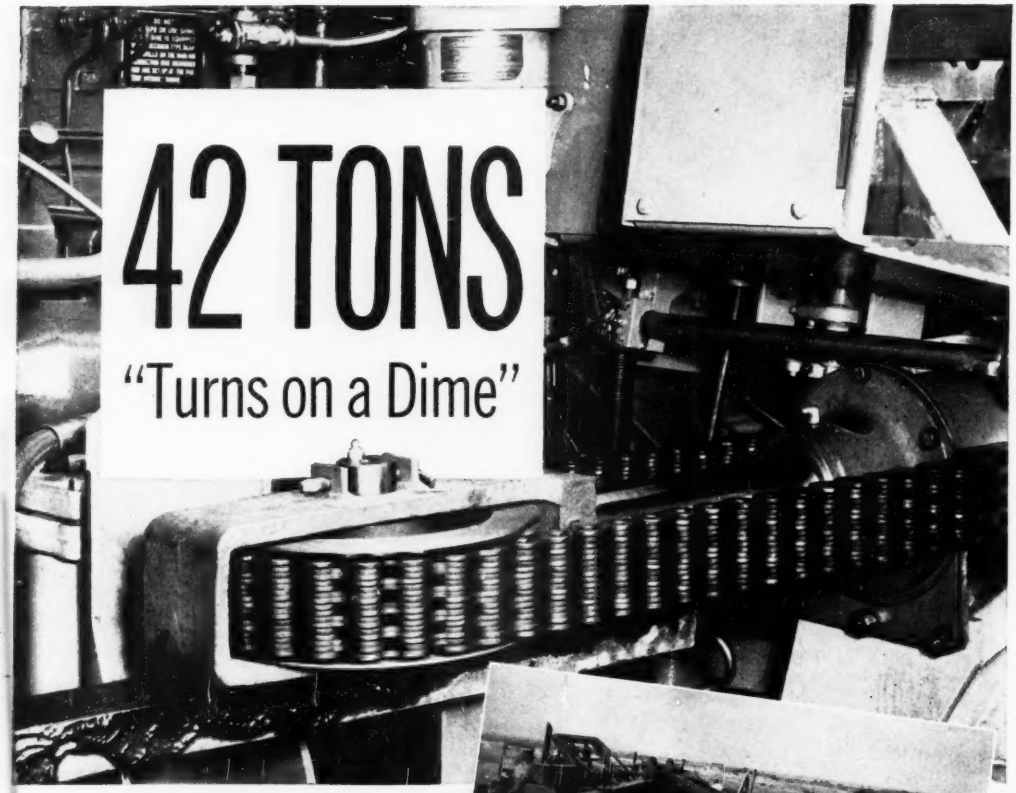
•

Sizes and types for practically all models of commercial and industrial engines

•

Expert service available the Whole World Over

AMERICAN BOSCH CORPORATION • SPRINGFIELD 7, MASSACHUSETTS



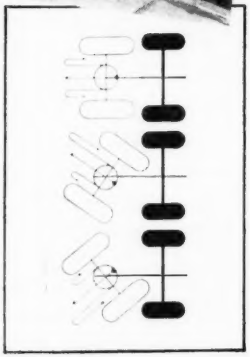
WHITNEY *Chain*

Helps give Terra-Cobra positive steering

The Wooldridge Terra-Cobra — massive self-propelled earth-mover — features among its advantages a unique two-wheel hydraulic steering mechanism. Actuated by the steering arm, the front wheels carrying the motor unit are swivelled and automatically locked at the desired degree of turn or travel until the operator wishes to change his direction. This "tru-control" steering means higher travel speeds without fear of jackknifing even on soft shoulders or embankments.

To assure positive transmission of power from the hydraulic pistons to the steering wheels, Wooldridge uses *Whitney* 1¼" pitch, 8 x 8, special cable chain. And for a good reason — these husky alloy steel chains easily withstand the severe high loading and shock loading conditions encountered in earth moving operations. For additional dependability, Whitney Roller Chains are also used to transmit power from the motor to the driving wheels.

Whether your equipment involves earth-movers, graders, scrapers, etc., it is good business to *standardize* on Whitney Chains and Cut Tooth Sprockets . . . *the all steel drives.* Write for complete information and specifications.



WHITNEY CHAIN & MFG. COMPANY
Division of Whitney-Hanson Industries Inc.
222 HAMILTON STREET, HARTFORD 2, CONNECTICUT

look to P&H for added values

HOW MUCH will "Magnetorque"* swing save YOU?

Here is the answer: Owners report big savings!

Relining costs are completely eliminated — no spare sets of clutch shoes to buy — no costly man-hours to install or adjust — no lost production time!

Actual cost records show that P&H MAGNETORQUE swingers cost less than $4.00 per month.

Users figure it costs too much *not* to have the "Magnetorque," which explains the growing demand for these ultra-modern P&H machines. See one on the job.

P&H HARNISCHFEGER

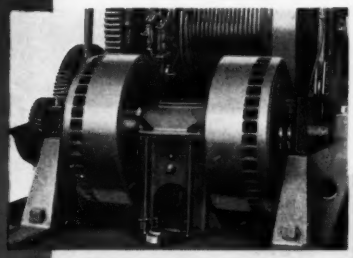
EXCAVATORS

4464 W. National Avenue
Milwaukee 14, Wis.

P&H 1055 — 4-YARD DRAGLINE

THE P&H MAGNETORQUE replaces the old frictions for swing and propel motions—transmits power electro-magnetically. It's smoother, more dependable, thoroughly proved.

*T.M. of Harnischfeger Corporation for electro-magnetic type clutch.



YOU CAN BE **SURE**..IF IT'S

Westinghouse

A-C Welding will help!

The typical experience of an eastern manufacturer demonstrates how Westinghouse a-c welding equipment can help you to offset rising operating costs. Using 27 newly-installed Westinghouse a-c machines, this customer enjoys a monthly saving of $810.00 in power costs alone . . . enough to pay for the entire installation in 18 months!

The Westinghouse Flexarc "65" pictured above, has all the features that contribute to this kind of cost slashing performance. Its higher electrical efficiency and lower "no load" losses mean lower power bills. Its lack of moving parts means substantially reduced maintenance expense. Its ability to provide good welds, faster, means fewer man hours and an attractive saving in wages.

Flexarc "65" welders are available in 200, 300, 400 and 500-ampere ratings and operate with an open-circuit secondary voltage of *only 65 volts.* Arc striking is easy and good arc stability is maintained without the addition of troublesome gadgets.

Westinghouse welding engineers are ready to assist you in planning the switch from d-c to a-c or in applying a-c to jobs where you have not before considered welding. But first, get the complete story on the advantages of a-c welding in booklet B-4199. Address: Westinghouse Electric Corporation, P. O. Box 2025, Buffalo 5, N. Y.

J-21506

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DO 4 DAYS' WORK IN 3

with

Air Plus pressure* behind your tools

New Jaeger compressor ratings mean steady 90 lbs. pressure

at which tools do 30% to 40% faster work

Drills and breakers, that loaf under weak 70 lbs. pressure from undersized compressors, get up and go to work with Jaeger air power on the job. Jaeger's "new standard" ratings provide the air you need to keep tools working at top pressure, increase their speed an average of 200 blows per minute and put full impact into every blow. *Users will tell you they can do as much work in 3 days as they used to do in 4, with the same men and tools.*

From the Model 75, that runs a heavy breaker at full 90 lbs. pressure, up to the Model 600 that runs two big wagon drills at top efficiency, every "Air Plus" rating is designed to match today's tools. See your Jaeger distributor, or send for Catalog JC-8.

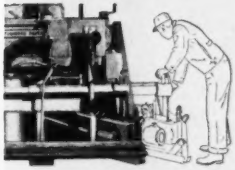
*"*Air Plus pressure*" means steady 90 lbs. at the tool; requires more air than old 60 to 500 cfm ratings established in 1932.

the Paver of the future

JAEGER'S BP-5

Automatic Grade Matching

12' Equalizing Runners



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No Weight to Seal New Mat

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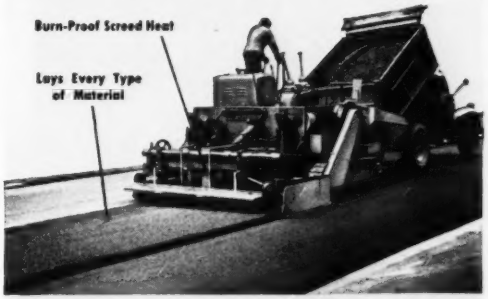

To the basically correct principles of paver design long-proved in earlier model Jaeger pavers, the Model BP-5 adds many important improvements in automatic precision and adaptability to the varied materials and conditions encountered in road, street and airport work. For complete information, see your Jaeger distributor or send for Catalog BP-9. Early deliveries will be limited to orders already on hand.

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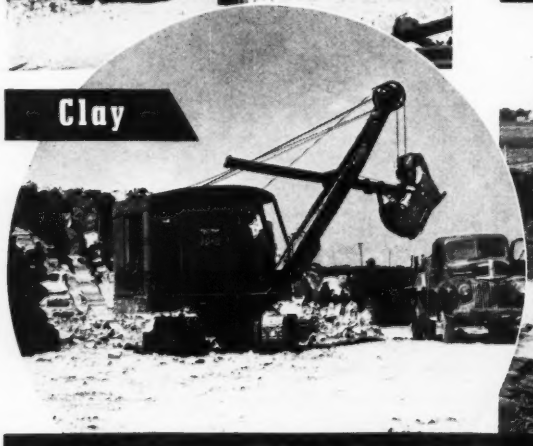

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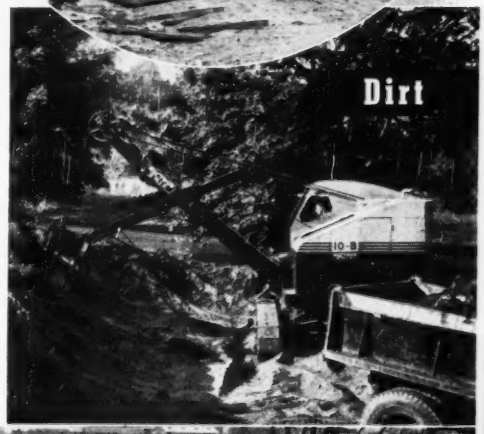
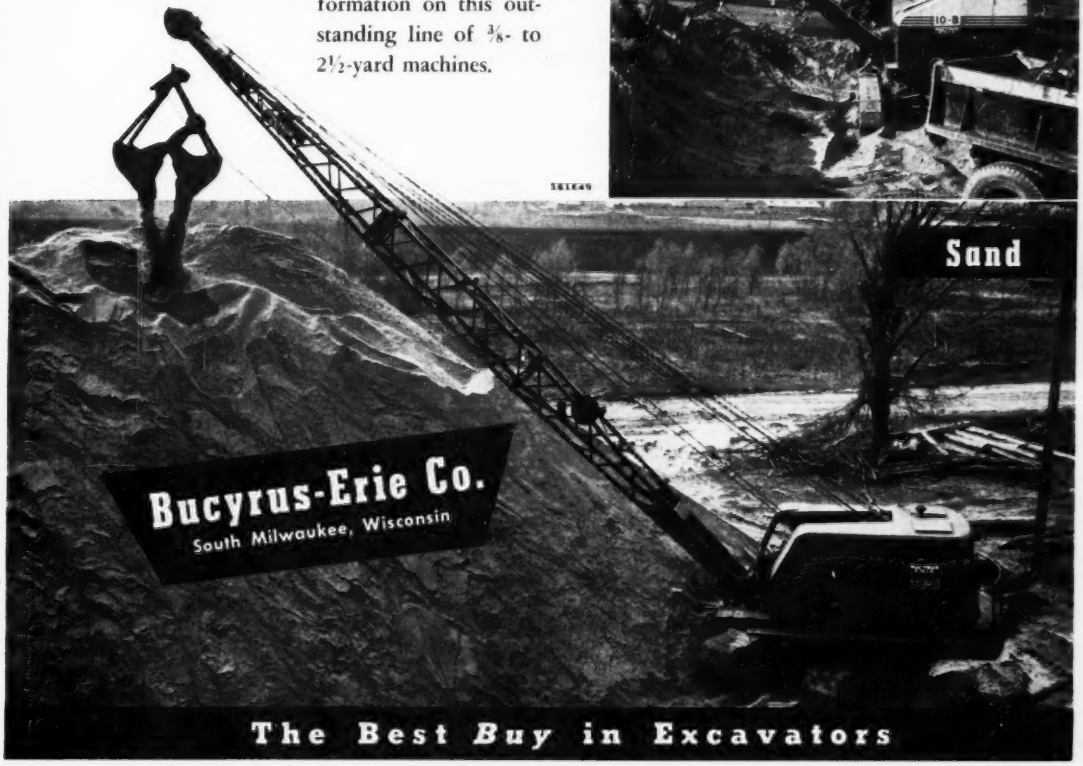
★ The pictures on these pages show a few of the hundreds of ways Bucyrus-Erie owners are using their machines to bring in profits. You, too, will find it easy to keep your Bucyrus-Erie profitably busy because it thrives on any diet — operates at top efficiency with any front end. See your Bucyrus-Erie distributor for complete information on this outstanding line of ⅜- to 2½-yard machines.





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Count on Blue Brute Portable Mixers for lower-cost concrete on every job. Quickly spotted and towed, and with such features as smooth, positive gear-and-pinion drive . . . high-carbon, Timken-equipped drum rollers . . . and Ransome's famous mixing action, they're sure bets for speedier, better mixing.

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Team up these fast, hard-hitting Blue Brute Air Tools with Blue Brute Compressors — and watch your daily expenses go down. Though tough and powerful, they have the lightness and compactness to keep your workers more satisfied—and more productive.

H9-3

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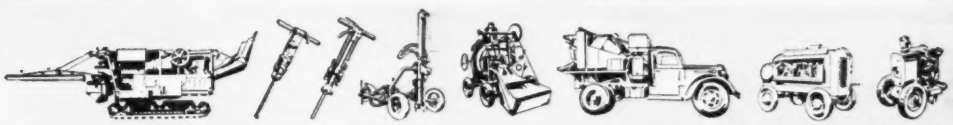
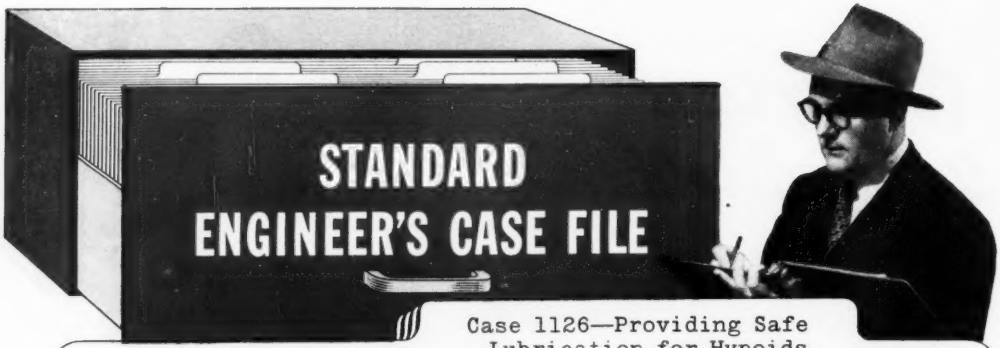
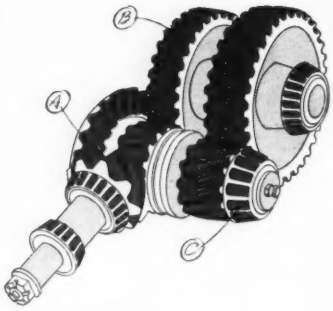


IF IT'S A CONSTRUCTION JOB, IT'S A BLUE BRUTE JOB



Case 1126—Providing Safe Lubrication for Hypoids



HYPOID-HELICAL, DOUBLE-REDUCTION DRIVE

A commercial transfer truck with RPM Multi-Service Gear Lubricant in its hypoid gears, hauled 10-ton average loads for 165,000 miles without the differential being touched. The truck is still in use every day and the gears are quiet and show no noticeable wear. Recommended for all hypoid gears. Made in four grades: SAE 75, 80, 90, and 140.

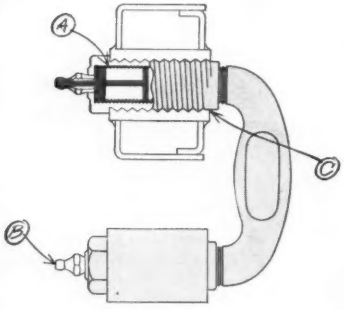
A. Resists rubbing action of hypoid gear teeth . . . compound reacts chemically with metal and forms protective lubricating coating.

B. Resists extreme temperatures and pressures . . . highly oxidation resistant.

C. Extremely stable — will not separate . . . provides tough lubricating film on integral bearings and other parts.

Inhibitors in RPM Multi-Service Gear Lubricant resist rusting of parts and prevent foaming.

Case 1128—Reducing Chassis Bearing Wear



U-TYPE SPRING SHACKLE

Replacement of shackle bearings, kingpins, fifth wheel plates, etc., on a fleet of trucks and busses was reduced materially by regular lubrication with RPM Chassis Grease T-B. Recommended for all chassis lubrication in any operation. Comes in 3 grades, Light, Medium, Heavy, to meet all climatic conditions.

A. Resists shock loads . . . effective anti-wear ingredient assures cushioning film between parts.

B. Pumps easily and feeds to entire bearing surface — prevents "spot wear" from shifting bearing loads. Special stringiness additive helps keep lubricating film on bearings under all conditions.

C. Forms protective seal at outside edges of bearings — keeps out dust grit and water.

Extremely stable, RPM Chassis Grease T-B will not change in structure while in use or in storage.

For additional information and the name of your nearest Distributor, write

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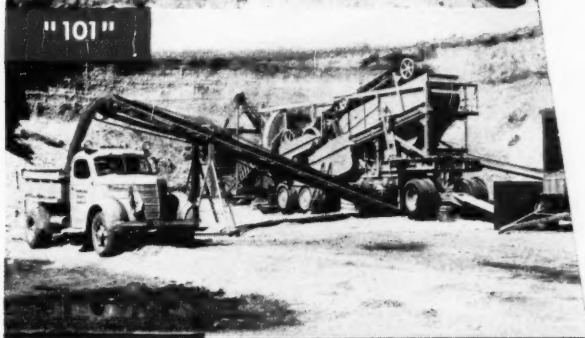

PORTABLE GRAVEL PLANTS

For Every Need

Whatever your production requirement may be—there's an Austin-Western Portable Crushing and Screening Plant to meet it. From the smallest single-unit plants to the magnificent two- and three-unit combinations every Austin-Western Portable Plant is correctly balanced from feed to delivery conveyor, equipped with high-capacity crushers, and engineered for maximum output at the lowest cost per ton. No matter what size or quantity you want—there's an Austin-Western plant "tailored" to fit your needs—designed to do your particular job with speed and efficiency.

"50" The "50" Plant illustrated is one of the many smaller sizes of Austin-Western Portable Plants. Bins, Crushers, Screens, Elevators and Conveyors are available in a wide variety of sizes and may be easily combined to meet any individual production problem.

"81" A 1036 Roller Bearing Jaw Crusher, combined with perfectly matched screens and conveyors, make the compact, efficient "81" the ideal plant for many installations. It's engineered from end to end for continuous "low-cost tonnage."

"101" The unrivalled production of the "101" is due to its high-speed Jaw and Roll Crushers, and its completely "balanced" design which provides unusually wide conveyors and extra-large positive-throw type vibrating screen.

TWIN-UNIT Multiple-Unit Plants combine light transport weight, and great flexibility in operation, with the capacity necessary for tremendous production of material. Several sizes can be produced at one time.

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Be Right 3 Ways...

PICK FORD POWER!

1 **RIGHT POWER** for your job in the five models of Ford's Industrial Engine line!

2 **RIGHT FEATURES**—the best of the latest, right from Ford Industrial Power "Headquarters"!

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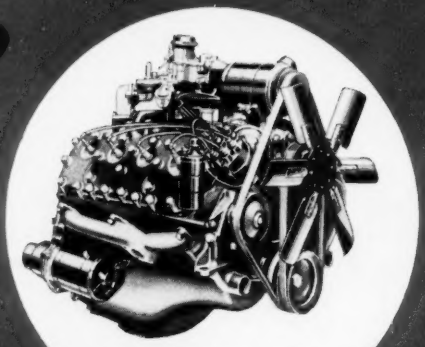
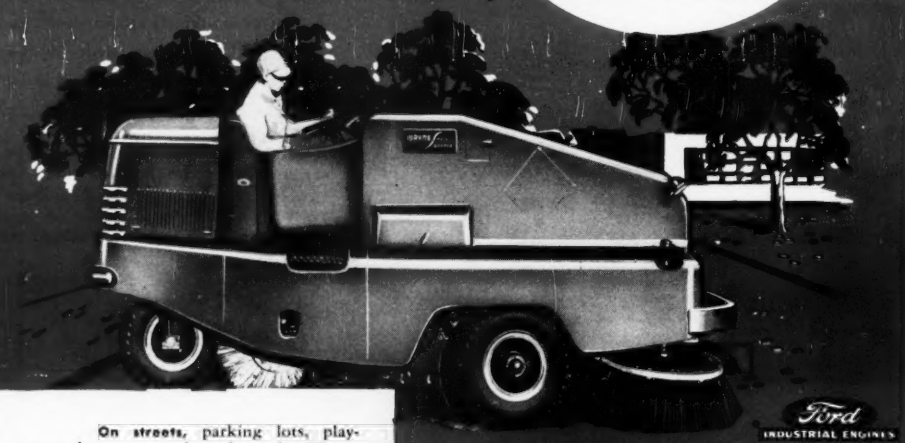


Ford 239 V-8 Industrial Engine
(239 cu. in. displacement)



On streets, parking lots, playgrounds—any paved surface—the Wayne Motor Sweeper gives a clean sweep at less cost per mile, handles easily in restricted quarters. Made by the Wayne Motor Sweeper Division of Brown-Bevis Co., Los Angeles, this equipment uses, for motive and sweeping power, the Ford 239 V-8 Industrial Engine—a prime factor in the economical operation, reliable performance and simplified maintenance of the unit.

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Now—5 great engines in the Ford Industrial Power "family." A "four" of 120 cu. in. displacement . . . two "sixes"—226 cu. in. and 254 cu. in. displacement . . . two "V-eights"—239 cu. in. and 337 cu. in. Every one completely new, with the *right* power for your job—farm implement power; construction; standby units; material handling; pumping, etc. Send a post card today for specifications.

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YOUR JOB IS WELL-POWERED WHEN IT'S FORD-POWERED

TRAIL BLAZER

on boulevard or cross-country

Lorain TL-20 Moto-Cranes *are cutting* construction costs

Wherever the job—in any kind of going—be it boulevard, rutted back road, or cross-country, your Lorain TL-20 Moto-Crane will take the "short cut" to lower construction costs. Traveling on a rubber-tire mounting, the TL-20 Moto-Crane writes its own transportation ticket between jobs at speeds up to 30 M. P. H.

And what if each job does pose a different material handling problem? With interchangeable boom equipment, this "quick change artist" can vary its attack as a shovel, crane, clam-shell, dragline or hoe. If you want a machine with rugged dependability and versatility for any type of operation—which will come up with a healthy profit on completion of the job—see your local Thew-Lorain Distributor—today. Ask him to show you TL-20's at work in your locality. You'll find it a "convincing experience."

THE THEW SHOVEL CO. • Lorain, Ohio
Cable Address: UNLOADER

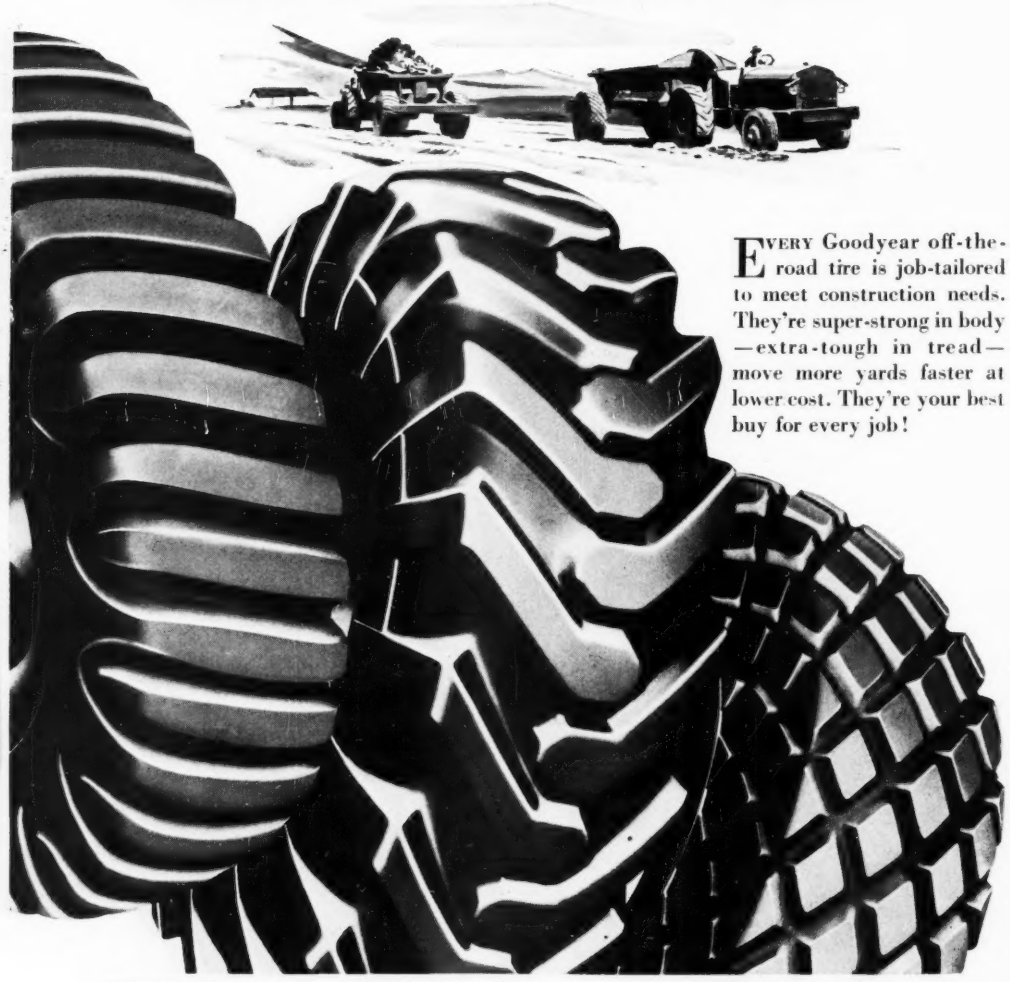
ONLY TL-20 HAS ALL THESE JOB-TESTED FEATURES

Anti-Friction Bearings • 5 Identical Shoe Clutches 2 Crawler Speeds (Standard) • Unit Assembly for Easier Service • Starter and Generator (Standard) 9 Rubber-tire Mountings Available • 2 Operating Lights (Standard) • Independent Rope Crowd Shovel • "Full Circle" Crawler Steering • Drop Forged Crawler Treads • All-Purpose Crane Boom Interchangeable Parts.

THEW-LORAIN 1899 50 YEARS 1949 ANNIVERSARY

Lorain ® **Thew TL 20 Lorain**

More yards are moved on these three tires than on any other kind



EVERY Goodyear off-the-road tire is job-tailored to meet construction needs. They're super-strong in body—extra-tough in tread—move more yards faster at lower cost. They're your best buy for every job!

HARD ROCK LUG
for super-stamina
in all rock work

EARTH MOVER SURE-GRIP
for maximum traction
on drive wheels

EARTH MOVER ALL-WEATHER
for drawn vehicles and
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Sure-Grip, All-Weather—T.M.'s The Goodyear Tire & Rubber Company

GOODYEAR

OFF-THE-ROAD TIRES

We think you'll like "THE GREATEST STORY EVER TOLD"—Every Sunday—ABC Network

Construction Methods

Volume 31 | MAY, 1949 | Number 5

CUTS AND FILLS

TWO UNUSUAL DISASTERS, both resulting in fatalities, marred the construction scene last month. The almost-completed cantilever span on the Bluestone River (W. Va.) Bridge failed during routine erection, killing five men. One worker was killed by collapse of forms on a reservoir roof in California. No official explanation of the exact cause of either accident has yet been made. But, as both occurred during construction operations, it is logical to assume that somehow the construction procedure was involved. Such accidents can be prevented only by eternal vigilance on the job, by careful planning and study of all risks, and by double-checking all construction loads and stresses. Surely, we know how to build without the structure falling down during construction.

A LITTLE GIRL died deep down in an abandoned well casing, breaking the combined hearts of a nation. A little boy drowned in an excavated foundation pit. Both tragedies resulted from somebody's neglect and carelessness. Engineers and contractors: Look around your jobs, your plants and yards and just make sure you have no hidden traps, no unprotected "attractive nuisances", or potential hazards where the kiddies might come to grief. Young lives are too precious to snuff out by carelessness.

ACTUAL CONSTRUCTION COSTS are dropping faster than cost indexes. The latter show a 1½-percent decline since last fall, while bids are 10 to 15 percent lower. Bids on public work are running consistently below estimates. The answer is simple—more competition, more equipment and men available, fewer contingency risks. In other words, construction is getting back to normal, but don't look for any big break in construction prices.

MARK YOUR CALENDAR right now for the Construction Section meeting of the National Safety Congress, Stevens Hotel, Chicago, Oct. 25-26. Outstanding talks and two panel round-table discussions, directed toward project managers, superintendents and foremen, promise a most interesting and informative session. Construction safety really pays off in money as well as in preventing human suffering. Come to Chicago and find out how and why.

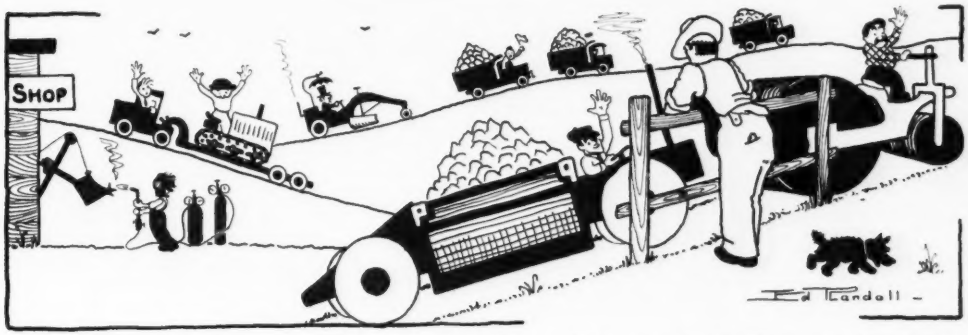
WHAT'S YOUR RECORD for shaft sinking? Dravo Corp. excavated 250 ft. and lined 200 ft. of 16-ft. shaft in one month of 28 working days at a coal mine in Illinois. They want to know if this isn't a world's record of some kind. We'll say it is until we stand corrected.

IN READING about the multitude of demands for higher wages and more fringe benefits by workers in numerous trades, it's a relief to come across an item saying New York bricklayers are signing up for another year at no increase in wages.

REPRINTS OF Job Office Procedure

IN RESPONSE TO requests from our readers, the series of three articles "It Pays to Organize Your Office—Contractor's Job Office Procedure" has been reprinted in limited quantity. These articles were taken from an employee's manual compiled by Johnson, Drake & Piper, Inc., Minneapolis contractors. They have no copies of the manual available for outside distribution, so if you want one or more copies of this useful document, order them from the editor of Construction Methods at the following prices, postage prepaid:

- ☐ Single copies (up to 25) each $0.25
- ☐ Lots of 25 copies to one address 5.00
- ☐ Lots of 50 copies to one address 8.50
- ☐ Lots of 100 copies to one address 15.00



Spike Sez: KEEP 'EM ROLLING is a swell theme for Construction Methods' big special issue on equipment maintenance coming out in July. It's a sweet sight to see all this stuff rolling and producing, but it takes a lot of savvy and attention to keep it that way. Watch for that July issue, boys, 'cause it will be chock full of good, sound maintenance dope and scores of tips you can use on your jobs.

Special steel forms are one item where . . .

Clever Tricks Pay Off on Concrete Sludge Tanks

1. Ring foundations are first step . . .

Following general site grading, spread circular footings are poured in forms held by giant C clamps over top of forms. Trucks haul 2-yd. buckets from mixing plant for placement by Lima crane.

FROM FOUNDATIONS to covered roofs, Pacific Bridge Co. introduced several clever and efficient construction schemes in building eighteen 111-ft. dia. reinforced concrete sludge digestion tanks 33 ft. high at the new Los Angeles Hyperion sewage treatment plant. The tanks are part of the San Francisco contractor's $3,991,000 contract for the digestion system at the plant.

Chain Excavator Trims Bottom

Following general excavation of the site in oceanside sand dunes, the first step in tank construction was to pour circular spread footings. Inside and outside forms were held in place and together by large C clamps over top of forms. Next, the dished bottoms of the tanks were excavated and shaped by a revolving chain excavator with one end fastened at center and the other end riding on the ring foundation. Bottom concrete was placed before the walls were started.

The walls were built with a special set of steel forms, designed and fabricated by the contractor. Because the tanks were to be prestressed by wire wrapping, concrete could be placed in one quarter of the circumference at a time. Only four sets of inside forms and three of outside forms were needed for the eighteen tanks.

Each set was made up in three parts, thus permitting easy handling by Colby gantry cranes set up on the job. Outside and inside forms were bolted together at the top, middle and bottom. Thus, only two rows of 1⅜-in. dia. bolts, middle and bottom, went through the concrete. Bolt holes in the concrete were later plugged with mortar.

Steel Spider Supports Roof

Upon completion of monolithic sections of the walls, the dome roofs were poured on a wood form system supported by a welded pipe tower and radial steel trusses. All forms, reinforcing cages and concrete buckets were handled by the gantry cranes.

Prestressing wire was tightly wrapped around the tanks by a self-propelled traveling rig supported from a carriage at top of wall. Wire strands were occasionally bolted to the wall by clamps held by lag screws in drilled holes. At frequent intervals several ad-

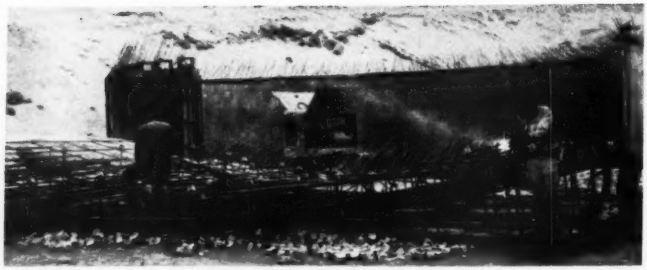
(Continued on page 39)

2. Followed by excavation for dished bottom . . .

Rough excavation of sunken tank floor is by clamshell. Then this revolving rig, one end carried by center spindle and outer end riding on ring foundation, excavates and trims sand backfill to shape by endless chain scrapers designed for job.

3. Sand pours out of revolving trimmer . . .

Combination screed and trimming excavator shapes bottom for conical floor concrete.



4. Welders fabricate bars into cages . . .

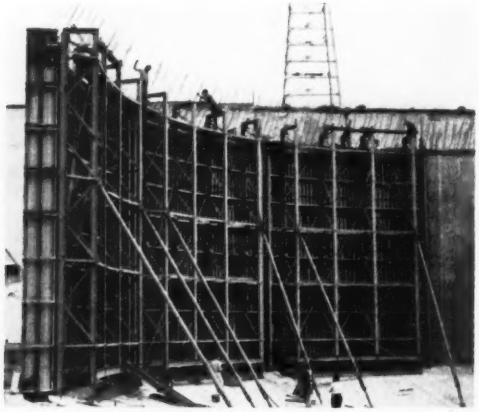
Reinforcing is made up into complete sections on curved jig by welding. Precast concrete block spacers to rest against inside form are wired to cages before they leave jig.

5. Strongback easily handles cages . . .

Nine-point suspension through three sets of slings permits fabricated reinforcing cages to be lifted and placed without distortion.

6. Cages are welded together in place .

Window washer's belts assure safety for welders and rodmen fastening outer form spacers in place and leave hands free for more efficient work.



7. Rugged steel forms for pouring walls . . .

One-quarter of 33-ft. high wall is poured at a time in these steel forms backed up by vertical trusses. Inside forms are set first, then reinforcing cages are placed before outside forms are set. Three sets of outside forms and four sets of inside units are sufficient for eighteen 111-ft. dia. tanks.

8. Buckets dump into spouts . . .

Concrete in 2-yd. dump buckets is handled to top of forms by gantry crane. Elephant trunk spouts extend well down into forms from frequently-spaced hoppers. Wall concrete is cured by spray from ring pipes at top.

9. Giant spider supports roof forms . . .

Radial steel trusses fanning out to top of walls from center welded pipe tower make up framework for carrying wood forms for dome roof.

(Continued from page 37)

jacent strands were clamped together to safeguard against loss in tension in case of a wire break. Wire splices were spiked to the wall by a cartridge-type Drive-It tool.

Exterior Walls Gunited

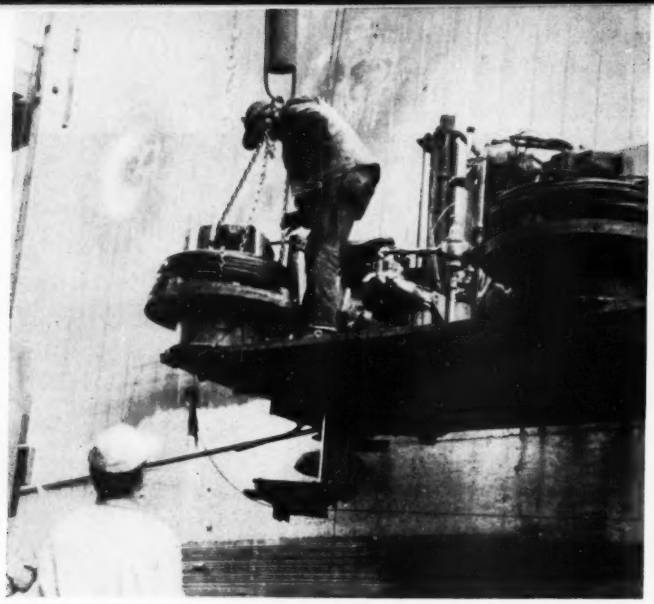
Final step in tank construction was building up a layer of concrete wall over the prestressing wire by Gunite application. This work was done from a portable tower scaffold carrying scaffolds at five levels which could be cantilevered out for working platforms.

Charles Bisordi is general superintendent on the job for Pacific Bridge Co. For the city, Lloyd Aldrich is city engineer, and Merrill Butler is deputy city engineer for design. Subcontractors are Ofcco Construction Co. for mechanical and piping, and Rutherford and Scoubye for reinforcing steel fabrication.

10. Wood form deck for 5-in. roof slab . . .

Dome roof form sheathing is laid out in gore sections on radial joists supported on steel framework below.

(Continued on next page)



11. Prestressing wire wrapped around walls . . .

This Preload self-powered machine wraps wire tightly on outside of concrete shell to prestress concrete in walls.

12. Wire wrapper hangs from roof . . .

Wrapping machine pulls against heavy cable to put tension into wire as it is laid. Rig is supported by adjustable slings from free-rolling rubber-tired carriage running on top of wall.

13. Some strands are bolted to wall . . .

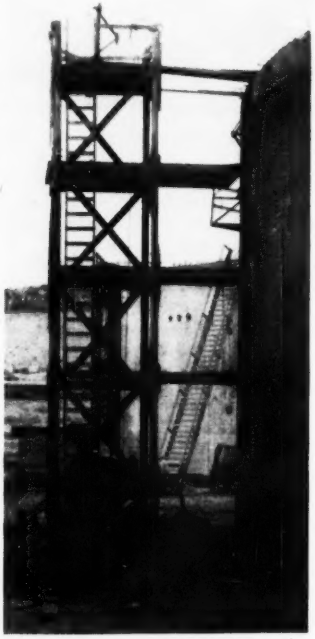
Studs set in holes drilled at intervals with pneumatic drill fasten pairs of wires to wall. Clamping adjacent strands together also guards against loss of tension in case of a wire break.

14. Cartridge tool fastens splices . . .

Wherever splices occur in prestressing wire wrapping, joints are fastened to wall by stud driven into concrete by Drive-It cartridge tool.

15. Guniting exterior is final step . . .

After prestressing wire wrapping is in place, outside wall is finished off with a coating of Gunite.



16. Cantilever scaffolds for walls . . .

Portable scaffolds are equipped with five extension platforms that can be extended out to either side, a handy feature when working between tanks.

HANGING FORM SYSTEM on San Francisco department store addition starts with fastening of hangers to bottom of girder with Nelson stud welder.

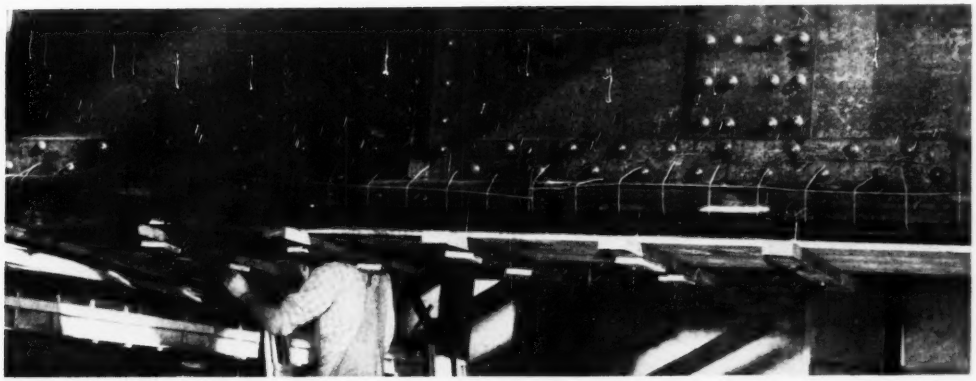
Hung Forms Save Scaffolding

CONCRETE TO FIREPROOF a deep, plate girder was poured in forms hung from the girder by studs welded to the bottom flange. By hanging the forms on the girder, the contractor, Dinwiddie Construction Co., saved a lot of high scaffolding work on the addition to Macy's Department Store in San Francisco. The heavy long-span girder will permit a clear sales space on the first floor. It is at such a height that the construction of scaffolding, had it been used, would have been a major job.

First step was to wrap the bottom flange with wire mesh. Next the studs were welded to the bottom flange by a Nelson stud-welder. The bottom form was bolted to these studs and the rest of the formwork supported on top of it.

Further complicating the girder forms was the requirement that the concrete fireproofing take the shape of the beam to reduce dead weight on the girder. This meant that the concrete had to follow a circuitous path to get to the bottom of the beam.

Ed Keilberg is superintendent for Dinwiddie Construction Co. and W. P. Day and Associates were architect-engineer.



BOTTOM FORM PANEL on deep girder is bolted to studs welded to bottom flange.

←

FINISHED FORM shows absence of scaffolding. Note indentation on side of beam. Wires are used to support floor slab forms.

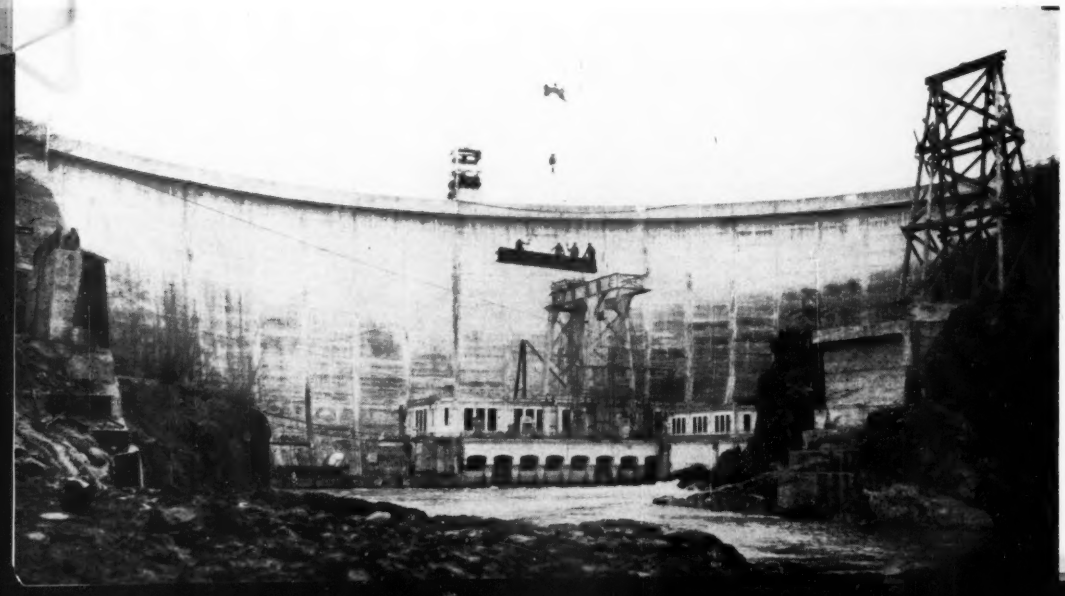
Suspension cables and cableway serve as . . .

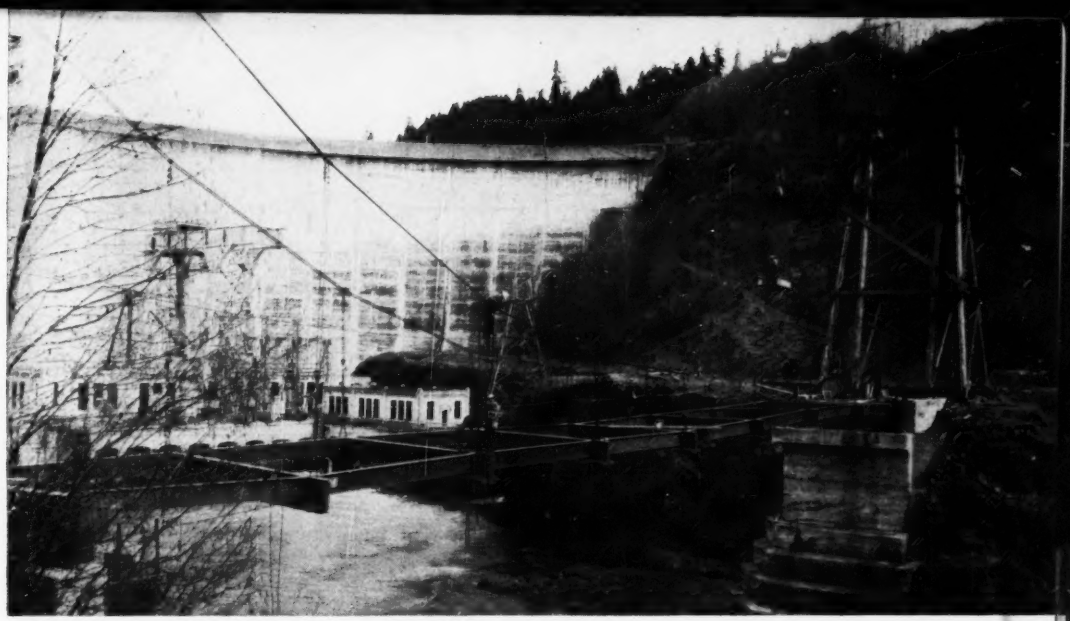
Skyhooks for Bridge Erection

THOSE OFT-LONGED-FOR SKY-HOOKS, dream of many a construction man, approached reality on erection of a 192-ft. truss span over Lewis River, Wash., below the Merwin hydro plant. Here American Bridge Co., thwarted from using conventional falsework because of deep water and expected flood flows, took to the air with a pair of suspension cables along each truss line and a material-handling cableway. All this was supported from two 70-ft. A-frame towers set high on the gorge banks.

The erection procedure was simple. First, the seven main floor-beams of the 8-panel structure

OUT OF THE SKY comes first of seven main floor beams to be suspended from cables as basis for erecting 192-ft. truss span at Merwin hydro plant.





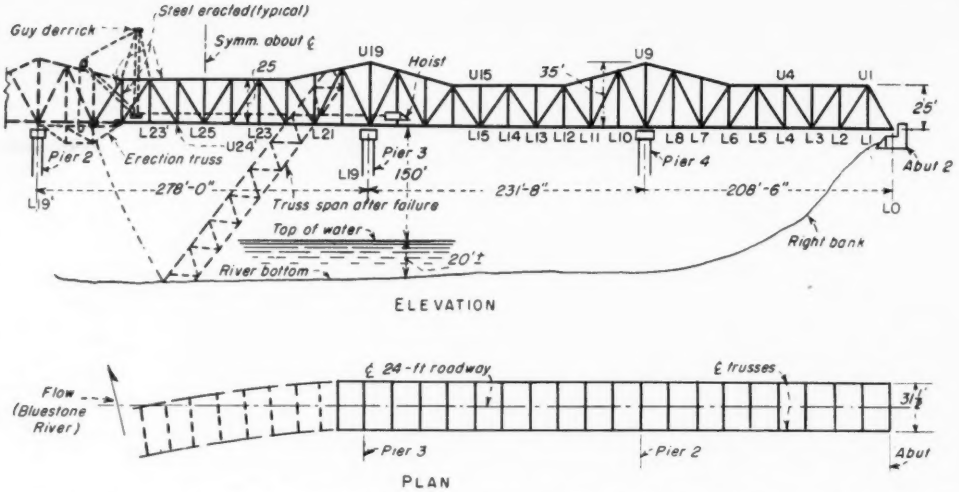
FLOOR TAKES SHAPE as lower chords are framed between floor beams. Coffin pull jacks in hangar system permit vertical adjustment of steelwork. Cableway for hauling steel members to position can be shifted along transverse tracks at top of towers to cover all of bridge.

were transported out from shore one at a time and suspended in approximate final position by wire rope hangers from the main suspension cables. Coffin pull jacks in each suspender system permitted vertical adjustment of individual beams during erection procedure.

The main floor system was framed complete, then the trusses were erected on top of the floor steel, topped off by the portal and upper bracing. In order to serve the entire bridge area, the cableway head and tail blocks were mounted on transverse greased skids on top of each tower.

Designed and built by the American Bridge Co. for the Pacific Power & Light Co., the bridge, containing 130 tons of steel, replaces one washed out by a 1933 flood. New generating equipment will be moved into the Merwin plant over the rebuilt structure. The job was under the direction of E. E. McKeen, West Coast manager for American Bridge Co., assisted by William H. Sielaff. C. O. Edmonds was job superintendent.

BRIDGE NEARS COMPLETION with top chord and lateral framing. Site of structure over deep gorge in powerhouse tailrace made suspended supports during erection more feasible than customary falsework.



FAILURE of Bluestone River Bridge main span occurred as long truss was approaching far pier by cantilever erection methods without falsework.

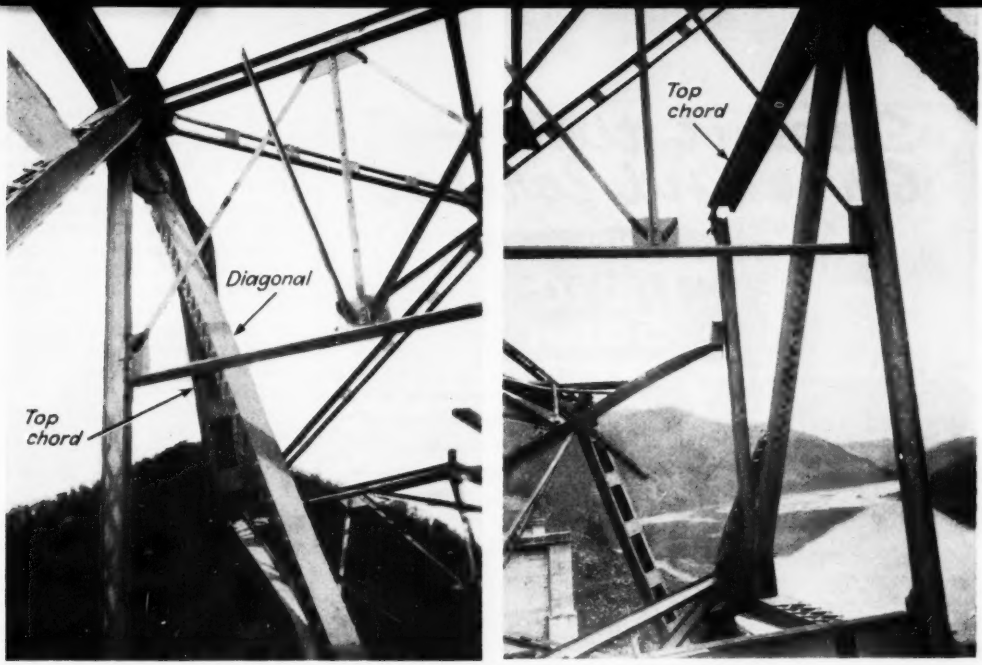
Cantilever Span Fails During Erection

PRECARIOUSLY SUPPORTED at top by torn and twisted truss members and bracing (below), 125 tons of steel present difficult salvage problem. Note floorbeams bowed in progressive amounts as they suffered increased impact from weight of additional floor steel. Lower end of wrecked truss landed 20 ft. upstream from centerline of bridge.

FAILURE of the Bluestone River bridge near Hinton, W. Va. on March 31 still remains shrouded in mystery. It was a 5-span cantilever truss highway bridge of conventional design being erected by conventional cantilever methods. Ten panels of the central 278-ft. span had been cantilevered out from the second pier, when the accident happened.

At that time a guy derrick with 63-ft. mast and 55-ft. boom, anchored on the floor steel in the ninth panel, had picked up a lightweight 3-panel erection truss and was booming out to lower it into position. One end of the top chord

TOP ANCHORAGES (below) for 63-ft. mast of 55-ft. boom guy derrick are still intact after it plunged into river. At time of accident, this derrick had picked up a lightweight 3-panel erection truss and was booming out to make a closure between next pier and downstream bottom chord of cantilever. Empty scaffold swinging from far truss is mute evidence of tragedy.



FAILURE OCCURRED without warning—the downstream top chord pulled in two at second panel point of cantilever (at right) while top chord of upstream truss bent about its first panel point (at left), following buckling of second panel of bottom chord.

of this inverted truss was to be pinned to the two end panel points of the downstream bottom chord. The other end was to be landed on Pier 3, to transmit part of the weight of the last two panels directly to the pier.

Failure occurred without warning. The outer end of the cantilever dropped 140 ft. to the river bottom, killing five steel erectors and injuring four.

The downstream top chord pulled in two at the second panel point of the cantilever, and the upstream bottom chord buckled in the second panel. Which member failed first is a moot question. The upstream top chord bent about the first panel point from the supporting pier.

The upper end of the wrecked trusses, together with bracing, floorbeams, and two central lines of stringers, are precariously supported at the point of failure by the upstream top chord and the downstream bottom chord. Removal of the 125 tons of wrecked steel will be a difficult job.

Independent investigations were begun immediately by the West Virginia State Road Commission and the Virginia Bridge Co., contractors on the job. Results of these investigations should be forthcoming soon, but until then, only surmise and conjecture are possible as to what caused the failure.

An on-the-spot survey of the wrecked span offered no solution to the mystery of its failure. Neither could the workmen on the bridge offer any rational reason for the accident.

There were no extraneous loads on the cantilever when it fell—the wind was not strong enough to be noticeable — truss members had been increased in section as necessary to take care of the erection stresses—and erection was proceeding according to plan.

Erection of the bridge was from the right bank of the river. The first span (208 ft.) had been erect-

(Continued on page 46)

TOP VIEW taken from floor steel of adjoining 232-ft. cantilevered span shows derrick hoist still undisturbed just back of floor beam directly above pier and inverted erection truss for upstream truss (at left) awaiting its turn to make closure between next pier and bottom chord of cantilever. Standard gage rails on timber ties carried push car for transportation of steel from river bank to guy derrick.

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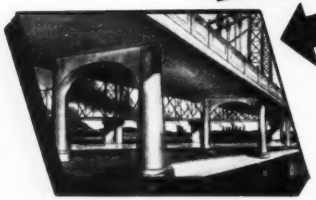
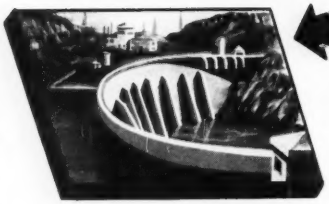
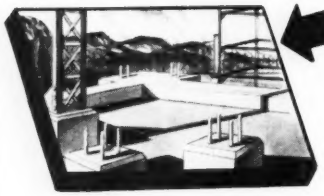
THE Thoro System



Surface deterioration from the elements or blistering of the concrete surfaces of viaducts, bridges and masonry structures of all types can be costly, both to the contractors' reputation and to the purchaser. Be sure you play safe by coating all masonry with our specially-processed THORO System products.



One tiny crack or the loosening of the masonry surface in a dam or waterway construction can be hazardous, as the elements eat into unprotected concrete surfaces. The THORO System products through 35 years of trial and change have reached perfection.



For setting of anchors, bolts and the encasement of important steel members, the THORO System Waterplug has been found to protect and eliminate corrosion.

Put your masonry problems up to us, our long experience working with this one subject, and hundreds of different types of masonry problems, is well worth while. Your inquiries and problems are invited. Order through your Builders Supply or Lumber Dealer.

Get our 20 page brochure, pictorially describing, in detail, "How To Do It," it's yours for the asking - No. 142.

Standard Dry Wall Products

BOX X, NEW EAGLE, PENNA.

(Continued from page 45)

ed on bents, and the second span (232 ft.), by cantilevering from the first pier to the second. This second span served as an anchor span for erection of Span 3.

Steel was transported from the bank to the guy derrick on a push car operating on rails laid on timber ties. The ties were carried on the two center lines of stringers. In order to reduce the dead load weight on the cantilever, the two outside stringers were not to be erected until the cantilevered span had reached the third pier.

Hoist Operates Guy Derrick

The derrick hoist was anchored on the previously erected second span, just back of the floor beam over the second pier. It operated the guy derrick through long boom and load lines.

The simplicity of erection procedure and the lack of any known factor that could be blamed for the accident, serves to heighten the mystery of why the Bluestone River bridge failed.

TO COPE WITH LOW HEADROOM PROBLEMS

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• This trailer is ideal for moving large cranes and shovels long distances at high speed.

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EXPERIENCE builds 'em

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Dam Houses From Shell Boxes

SURPLUS AMMUNITION CASES are proving to be an excellent building material for small homes erected at Charlestown, Wash., construction town for McNary Dam. Charles Kik bought thousands of the boxes at a war assets sale, then moved them to his Charlestown housing project for temporary storage.

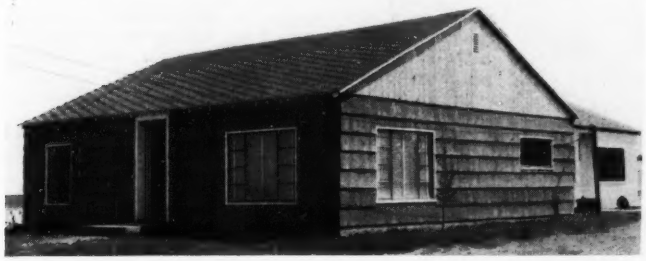
SURPLUS 105MM SHELL CASES, bought at low figure from War Assets Corp., are source of building material.

Here Johnny Hagen, Umatilla plastering contractor, suggested the 105MM boxes, 12x12x18 in., might be laid up in walls like large concrete blocks. They tried the scheme out on a pumphouse, and after the partly completed building survived a wind storm that wrecked several concrete block structures, they decided to build houses out of the cases.

The small houses are cheap, some costing only $1,000. Exterior finish is drop siding, shingles or stucco on wire mesh. Wall board or plaster on mesh is used for interior finish. The boxes, toenailed together, are self-insulating.

You guessed it! The new town has already been dubbed "Box Town."

TOENAILED TOGETHER, empty wooden boxes are laid up in walls. Hollow 12x12x18-in. cases are self-insulating. Here gable ends are conventional lumber; sometimes they are boxes trimmed to roof slope.



EXTERIORS of box-wall houses are treated in several ways. Here is an attractive combination of shingles and vertical siding. Drop siding or stucco on wire lath make equally attractive outside finishes. Interiors are plain or papered wall board, or combination of both, or are plaster on mesh ceilings and walls.

YOU CAN INSTALL AN "Aero-Seal" HOSE CLAMP WITH ONE HAND

THEY'RE SELF-FEEDING

1. "Aero-Seals" can be installed without removing the hose. Simply spring ends apart and snap around. Spring steel clamp retains circular shape.

2. Worm gear teeth engage perforated strip automatically. A fractional turn of the worm drive starts tightening action.

3. Tightening clamp with screw driver results in uniform clamping and *sealing* pressure around entire circumference. No crimping or bunching of hose to cause leakage.

"AERO-SEAL" Worm Drive Hose Clamps are easy and fast to install — save plenty of time and trouble. No loose parts to drop. Worm Drive is proof against vibration — "AERO-SEALS" *will not loosen.* Write TODAY for free sample.

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HOSE CLAMPS

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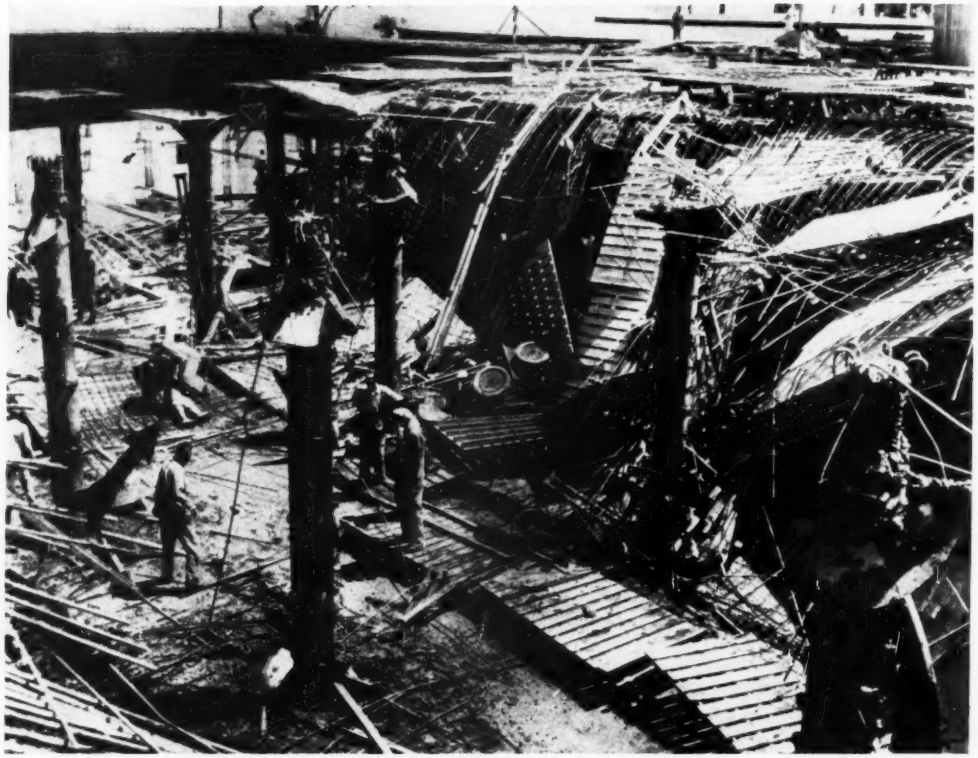


COLLAPSE of 40x85-ft. section of roof formwork on Santa Monica reservoir killed one man, injured several and left this unholy mess of 50 yd. of fresh concrete, reinforcing, form lumber, runways and buggies. Arrow points to injured worker being given first-aid by policeman. —Wide World Photo

VIEW from roof level shows how surrounding slab concrete and steel were drawn into collapse area.

Reservoir Roof Formwork Collapses Under Pouring Load

FORMS SUPPORTING a newly-poured 40x85-ft. section of 5-in. roof slab on the Santa Monica (Calif.) reservoir suddenly gave way, killing one employee of the Fitzgerald Construction Co., contractors for the job. Some 50 cu.yd. of concrete (100 tons) had just been placed in part of the roof of the 5,000,000-gal. structure when the accident occurred.

Columns in steel forms were being poured along with the roof slab. Conventional slab forms were supported on a forest of regular building slab jack posts. The workman killed was on the ground floor using a wheelbarrow, found 15 ft. from his body, indicating he had tried to escape the falling roof by running.

One unofficial theory of the cause of the collapse is that the victim's wheelbarrow struck and dislodged one of the supporting posts sufficiently to start a chain reaction in collapse of the whole section.

Speeds hoisting, saves power on TIMKEN® bearings

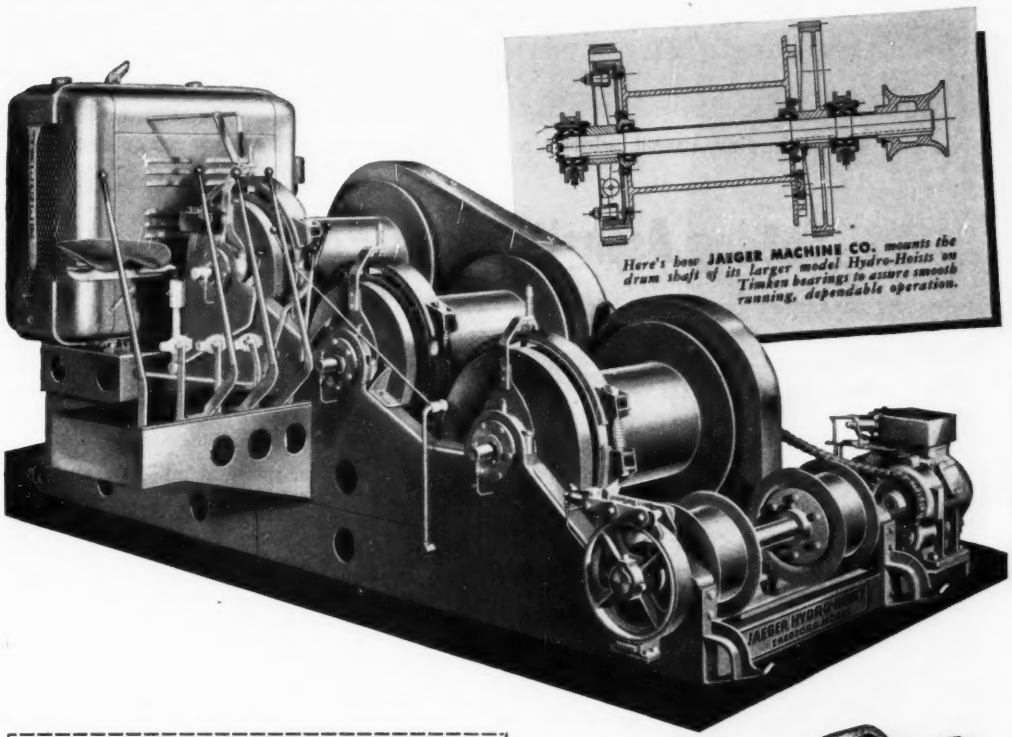
YOU can hoist loads speedily and efficiently with this Jaeger Hydro-Hoist on the job. Timken® bearings permit drums to turn freely under the heaviest loads. Loads start quickly and smoothly with no power loss due to friction.

Timken bearings keep both drums and drum shafts true-running and accurately positioned. Their tapered roller construction takes both radial and thrust loads in any combination. The line contact between the rolls and races gives tremendous load carrying capacity with negligible wear. Timken bearings normally last the life of the machine.

Timken bearings are made from the finest steel ever developed for this purpose—Timken fine alloy steel. Their true rolling motion and incredibly smooth surface finish enable them to operate freely, frictionlessly under the heaviest loads.

Timken bearings not only make better performing machines but also *better selling* machines—for Timken bearings are known and preferred the world over—wherever wheels and shafts turn. Be sure you have them in the equipment you build or buy. Look for the trade-mark "Timken" on the bearings. The Timken Roller Bearing Company, Canton 6, Ohio. Cable address: "TIMROSCO".

This symbol on a product means its bearings are the best.


Here's how JAEGER MACHINE CO. mounts the drum shaft of its larger model Hydro-Hoists on Timken bearings to assure smooth running, dependable operation.

TIMKEN BEARING CAPACITY RATINGS INCREASED 25%

Since Timken bearings were last re-rated some 15 years ago there has been such a further and constant improvement in quality that we are now able to announce a 25% increase in radial and thrust load carrying capacity. This may make possible the use of smaller bearings with savings in bearing cost, material cost and weight. Engineers will be able to utilize the advantages of Timken bearings in more applications than in the past.

A new Timken Engineering Journal, now in preparation, will give you complete capacity rating tabulations. For further assistance, write us today.

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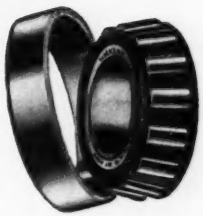
TAPERED ROLLER BEARINGS



NOT JUST A BALL ○ NOT JUST A ROLLER ▭ THE TIMKEN TAPERED ROLLER ▭ BEARING TAKES RADIAL ◫ AND THRUST ◫ LOADS OR ANY COMBINATION ✳

Five smiling mechanics spend winter months in contractor's maintenance shop . . .

Getting Asphalt-Laying Equipment

Ready for Summer's Grind

EQUIPMENT IS CLEANED, prior to overhauling and repainting, with a special Standard Oil Co. non-flash naphtha, applied both by hand brushing and with compressed air.

WINTERTIME is equipment-overhauling time for Max J. Zeller, asphalt paving contractor in Columbus, Ohio, for the last 20 years. The scene of operations is one corner of an old 300x150-ft. Hocking Valley Railroad shop, just a stone's throw from downtown Columbus.

Zeller leases the shop from the C.&O. R.R., its present owner. The remainder of the building houses a 400-ton per day stationary cold-mix asphalt plant, with a substantial area reserved for winter storage of bituminous paving equipment.

Due to this ample storage area, Zeller puts all his equipment, except 2 large trailers and a custom built Hetherington & Berner portable hot-mix asphalt plant, under cover when the bituminous paving season closes—about Nov. 15. He leaves it there until April 1, when the work starts again. The portable asphalt plant is overhauled at the site of its last operations in the fall.

This 3½-mo. shutdown gives plenty of time to overhaul, rebuild and repaint all the equipment each winter. Major items stored and repaired, include: 2 Barber-Greene asphalt pavers; 1 Littleford Bros. and 3 South Bend distributors; one 3,000-gal. Freuhauf asphalt transport truck; 1 Barber-Greene and 1 Haiss bucket loader; 10 Galion and 3 Buffalo-Springfield rollers, including trench-rollers; 3 Galion patrol graders; 1 Buckeye trench widener; 2 Apsco trench spreaders; 9 spreader boxes; two Rogers trailers; one 2-car and two 3-car Cleaver-Brooks heaters; 13 International 2- and 3-ton trucks; ten 1½-ton Chevrolet trucks; one 5-ton Autocar and 1 Ford truck.

Repair and overhaul of all this equipment, which lays down about 60,000 tons of bituminous concrete each year, keeps 7 mechanics busy.

SURROUNDED by equipment waiting its turn to be overhauled and new tires to be mounted, are Max J. Zeller's top men: EMMETT E. KNORR, construction superintendent (left) and BILL ECKLE, shop and equipment superintendent.

Five of the mechanics work on construction for Zeller during the summer and the other two run the cold-mix plant.

The 75x40-ft. shop area permits the overhauling of one to three pieces of equipment at a time, depending on their sizes. All cleaning is with a special non-flash naphtha, with both compressed air and hand brushing.

Paint is sprayed on by compressed air, using a Model 19 Binks gun. Each piece of equipment gets 2 or 3 coats of paint, either Tartar red or International red, with black trim.

Storage batteries are inspected, rebuilt if necessary, and given a full charge on a General Electric Tungar charger. Then they are put on a trickle charge of 1 to 2 amp. to maintain full strength throughout the winter.

Radiators are drained as soon as the equipment is stored in the unheated old building and a sign, "Drained," is hung on each. Experience has proved that it pays to have each radiator boiled out during overhauling, particularly those on slow-moving equipment. This work is sent out to a radiator shop.

The majority of all repair work is done by Zeller's mechanics. Some major repairs however, such as motor-reboring, are sent out to local machine shops. Repair parts usually can be gotten in 48 hr. although some special parts take up to 10 days.

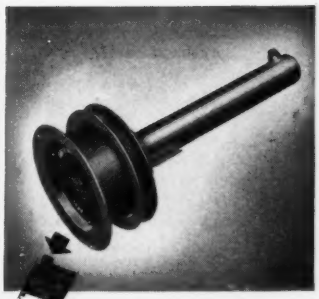
Principal repair equipment includes a 2-ton Yale-Townsend overhead chain hoist in the storage area for moving small equipment; a 1-ton overhead hoist in the shop; two portable Wilson electric ac. welders—a 200-amp. Wasp and a 300-amp. Hornet; an oxyacetylene burner; two air compressors; and miscellaneous electric drills and grinders.

No complicated card index record is kept of repairs and replacement parts. However, Bill Eckle, shop superintendent, keeps such a record in his little black book primarily to expedite quick ordering of field replacements requested by telephone if the new part goes bad on construction.

In fact, when any equipment part needs replacement it usually is ordered in duplicate on the premise that since the original one wore out, its replacement is apt to do likewise.

Complete overhauling, repair and repainting of his asphalt paving equipment to insure its efficient operation throughout the 7½-month construction season is not a new program for Zeller. He

(Continued on page 52)



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MAGNET REEL-TAGLINE COMBINATION

Rud-o-Matic Combination Magnet Reel-Tagline saves costly electric cable on overhead and boom crane magnet pick-up jobs. Steel tagline cable takes the load. Protective slack is maintained on electric cable. Models to fit your need.

Boom Crane or
Overhead Crane
Clam Shell Bucket
or Magnet Pick-Up

RUD-O-MATIC
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is your
answer!

RUD-O-MATIC TAGLINE

holds the bucket steady at any angle of the boom. Heavy duty torsion coil spring assures constant tension at all times, at any length of cable run-out. Easily installed. Interchangeable for use on equipment of similar size. 8 models for various bucket sizes.

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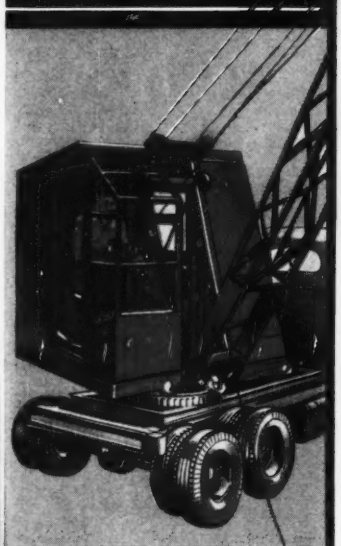
FOR SURE PROFITS



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1 Convertible Units
2 Mobility and Speed
3 All-Steel Construction
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12 Low Maintenance and Repair
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Every "QUICK-WAY" part will deliver its capacity rating and more, and you get more utility out of a "QUICK-WAY" fully equipped, than any comparable equipment. Each "QUICK-WAY" is easily converted in minutes from shovel to crane, dragline, clamshell, pile driver, scoop, trench-hoe or backfiller. Buy just the attachments you want to do more jobs better.

The essentials built into every "QUICK-WAY" mean sure profits on a small investment; economical to buy, economical to use, it's one of the most useful machines you can own. There's a "QUICK-WAY" owner near you; ask HIM. Your nearby "QUICK-WAY" distributor has a pleasant surprise for you when you ask him for prices.

MODEL E: 4/10 cu. yd. cap.
mounts on any standard 5-ton truck.
MODEL J: 1/4 cu. yd. cap.
mounts on any standard 1½-ton truck.

"QUICK-WAY"
TRUCK SHOVEL COMPANY
DENVER, COLORADO
WORLD WIDE DISTRIBUTOR SALES AND SERVICE

(Continued from page 51)

has been doing it for years, and it has always paid dividends through a minimum of time lost by equipment breakdowns.

The five men in the accompanying photo—equipment operators during the summer and maintenance mechanics during the winter—are (l. to r.): Red Landis, distributor operator; Jim Lowry, asphalt plant superintendent; Barney Roese, chief foreman; Charles Davis, distributor operator and Chet Heidelberg, chief mechanic.

Power Saw Cuts Pipe

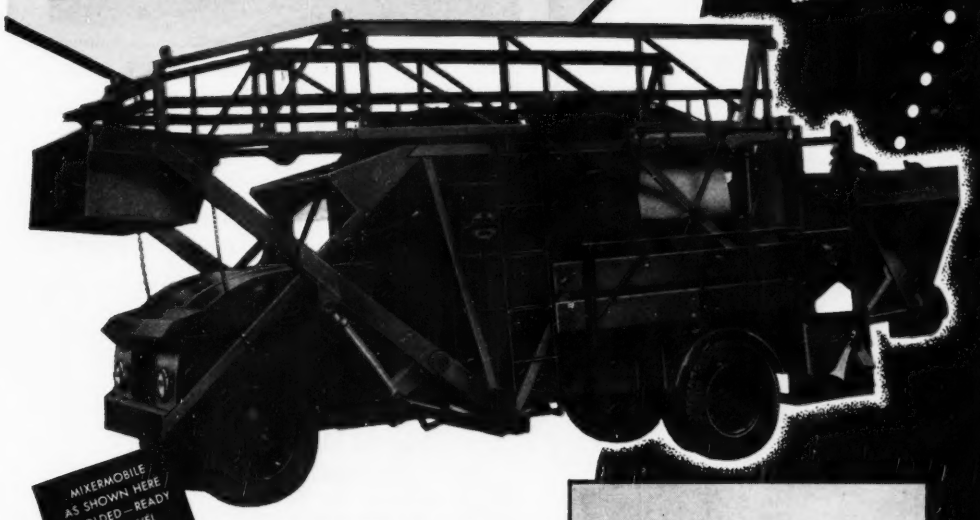
ON-THE-JOB CUTTING of 24-in. cast-iron pipe for high-pressure 6-mi. gas main in Indianapolis was done by Columbia Construction Co. with abrasive wheel inserted in Porter-Cable Speedmatic electric circular saw. To ends of flat base of saw, blocks were attached to make it seat properly on curved surface of pipe. Steel clamp fastened around pipe guided travel of saw. Cut was made by saw through one-third wall thickness of pipe and finished with hammer and cleaver.—Photo, American Cast Iron Pipe Co.

CASH FOR PICTURES

Enter the monthly CONSTRUCTION METHODS picture contest. Prizes of $25, $15 and $10 will be paid each month. See the announcement on page 96 of this issue.

It's New.. the one-yard MIXERMOBILE

A complete mobile concrete mixing unit and elevator



MIXERMOBILE AS SHOWN HERE IS FOLDED—READY FOR TRAVEL

GREATER PROFIT ON EVERY JOB...

The new one-yard Mixermobile Model M-6 built to fit all jobs, both small and large. Its complete mobility means more jobs covered every day.

SAVES money by using dump trucks—mixes concrete on the job.
SAVES cost of erecting tower—35-ft. tower attached.
SAVES cost of hoist and storage hopper—included with tower.
SAVES time—drive to the job, ready to mix in five minutes. When pouring is finished drive to next job.
Turns out 200 cubic yards of concrete per day.

Use MIXERMOBILE — the most economical method of handling concrete on the job. Cuts labor costs—no time wasted waiting for concrete. One man operates complete unit.

FEATURES: **HYDRAULIC CONTROLS.**
MIXER COMPLETELY ENCLOSED—controlled by specially designed shaft (gears enclosed on outside, no contact with cement.)
POWERED BY V-8 FORD ENGINE.
DISCHARGE TIMER
FOOL-PROOF WATER CONTROL SYSTEM.
WEIGHT— 20,000 lbs.
Will pass all highway limitations.

- 35-FT. TOWER lifts concrete in hoist bucket and empties into tower hopper. Eliminates cost of cranes and moving to and from the job. Extension may be had by special order.
- HYDRAULIC CONTROLLED SKIP holds 1 cu. yd. Loaded directly from dump trucks.

WRITE TODAY FOR LITERATURE AND YOUR NEAREST DEALER

MIXERMOBILE MANUFACTURERS

WAGNERMOBILE

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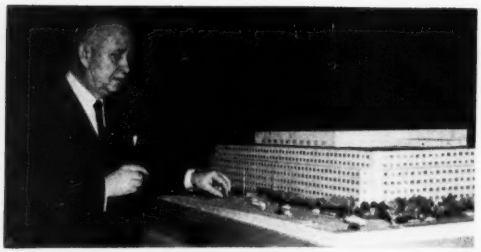
FOR DESIGNING SOLAR HOUSES this device developed by Libby-Owens Ford Glass Co. enables builders and architects to determine angle of sun for heating purposes in any city in world at any time of day. Solarometer helps fix width of roof overhang for correct shading of solar houses in summer. By adjusting "mechanical sun," operator can observe how its rays strike glass areas of solar house model in summer and winter.



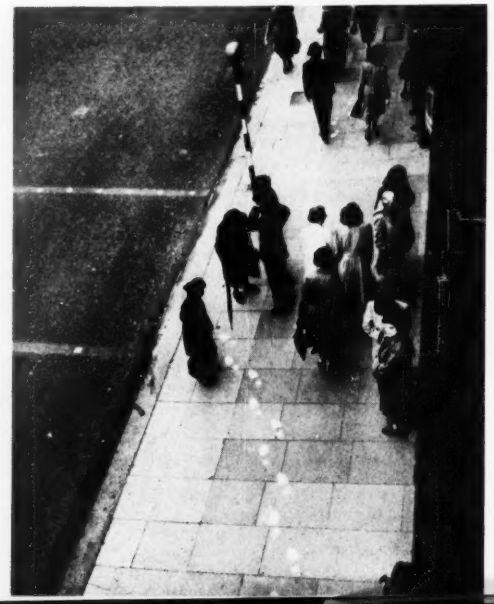
CARDBOARD MODEL built by O. VICTOR REESER of Public Buildings Administration, Federal Works Agency, is replica, on scale of 1/16 in. to 1 ft., accurate in all details of General Accounting Office Building in Washington, D. C., world's largest auditing and accounting house. F. W. A. is supervising its construction. Mr. Reeser, an architect, makes his models solely out of cardboard, waterproof glues, lacquers and celluloid for glass windows.

← HUGE DIPPER made by Lukens Steel Co., Coatesville, Pa., claimed to be world's largest, measures 11x 13x12 ft. and will handle heaped load of 55 yd. in power shovel stripping of overburden in Ohio coal fields.

ALUMINUM SUNSHADES (below) are an unusual architectural feature of new 13-story General Petroleum Building in Los Angeles, Calif., built by P. J. Walker Co., general contractor. To shield 1,600 windows from sun's rays 59 vertical aluminum fins extend 129 ft. from third-floor level to 13th floor. Each fin is 6 in. wide and extends 3½ ft. out from the building wall. Rolled aluminum sheet forming fins has fluted surface to diffuse light of sun and eliminate glare.

JOB oddities

FOOTPRINTS FOR SAFETY (below) are painted on sidewalk of High St., Kingston, London, to guide pedestrians to proper street crossing for avoidance of traffic accidents.—Wide World Photo



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ATLAS MORTAR CEMENT IS SMOOTH

The first stroke of the mason's trowel tells the story . . . gives proof of the smooth, buttery plasticity of Atlas Mortar Cement. Contractors also appreciate the satisfactory yield, the strength and fine color of Atlas Mortar. Its outstanding durability is proved by rigid laboratory tests.

Backed by years of research, Atlas Mortar Cement complies with ASTM and Federal specifications for masonry cement.

For further information, write to Universal Atlas Cement Company (United States Steel Corporation Subsidiary), Chrysler Bldg., New York 17, N. Y.

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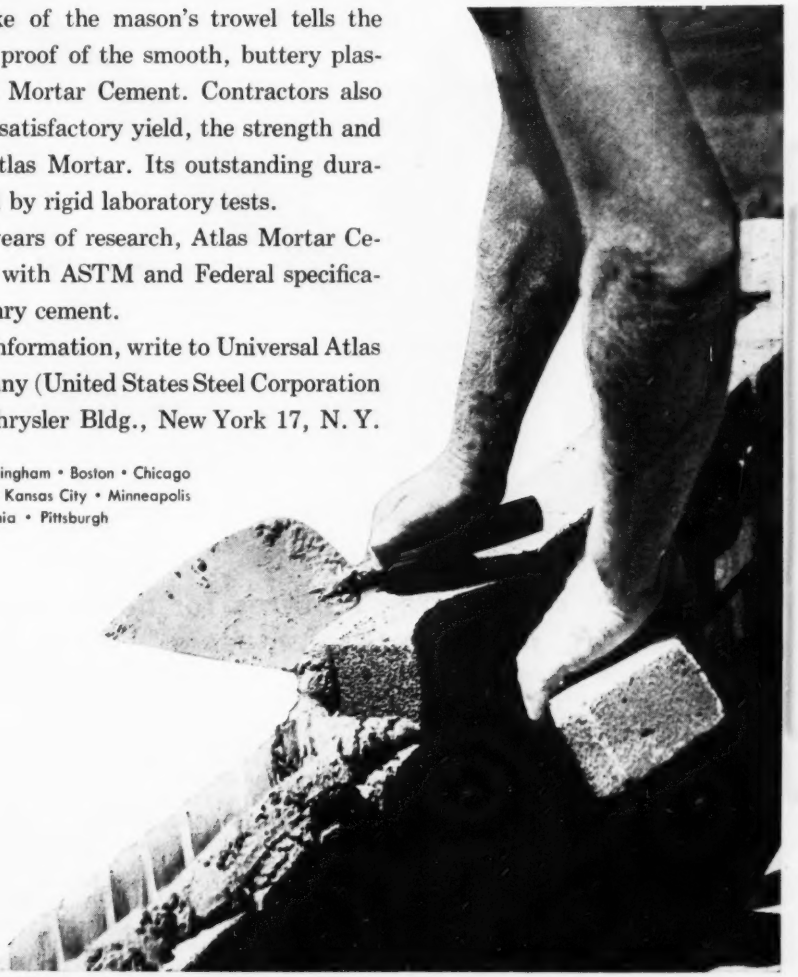

CM-MC-23

SKILLED HANDS PREFER

ATLAS MORTAR CEMENT

THE SATIN OF MASONRY CEMENTS

"THE THEATRE GUILD ON THE AIR"—*Sponsored by U. S. Steel Subsidiaries—Sunday Evenings—ABC Network*

NOW A NEW BANTAM

Illustrating the New BANTAM Trench Hoe with heavy duty 14' boom. New cast steel head permits larger, stronger axle and bushings to compensate for twisting strain.

NORMAL CAPACITY PER HOUR
Shovel or Dragline — 60 yards
Trench Hoe — 100 feet of five foot ditch
CRANE CAPACITY—5 TONS

advanced engineering features for better performance, longer life, more profits for users

The new Model M-49 Schield BANTAM now combines many more big machine features with the basic design which has made it the outstanding machine of its type. Jack, drum, and swing shaft assemblies are now mounted on heavier Timken tapered roller bearings. Drums, swing gears, and vertical swing shaft roll on sealed-for-life pre-lubricated ball bearings.

A new *triple* roller chain drive is sealed in and runs in a constant bath of oil. All gears and pinions throughout the BANTAM are machine cut, and parts subject to extreme wear are flame hardened. The swing shaft is equipped with the same type internal expanding clutch that has proved so efficient on the drum shaft.

That's not all! Now three larger adjustable cam-type hook rollers carry load, reducing wear and maintenance costs. Turntable rollers are re-designed with larger axles and longer bushings cutting bearing pressure by 50%. Machine cut bull gear is jig drilled and bolted in place for rotation if necessary to distribute wear.

And here's an outstanding feature never before offered. The new BANTAM is furnished with an independent spur gear drive boom hoist of patented design. Boom may be powered up or down or lowered on brake for fast operation making the BANTAM adaptable to more jobs than ever before.

You'll like the new cab design which gives greater visibility and more convenience in servicing. Climb in and put your feet and hands on the new simplified controls. You'll agree the new BANTAM is the sweetest machine of its kind you've ever handled. Write for complete details.

THE SCHIELD BANTAM CO., INC.
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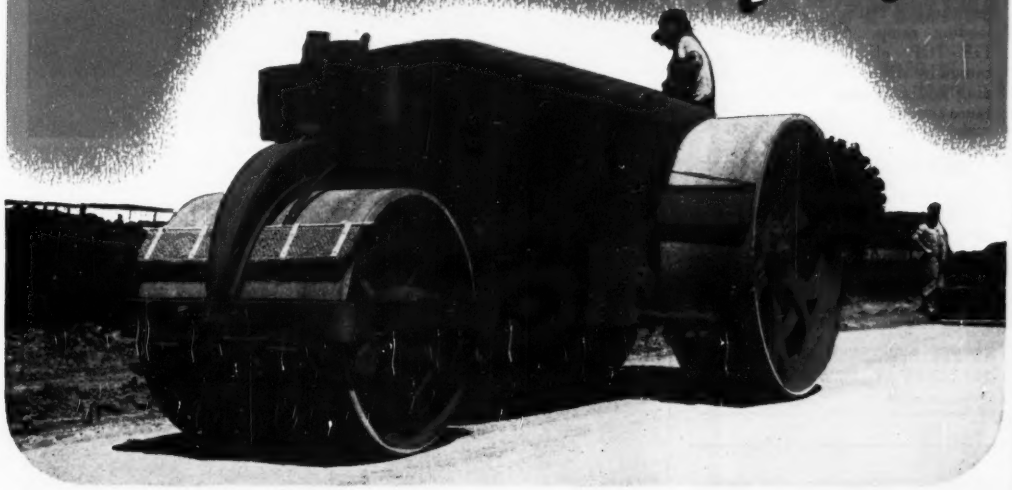
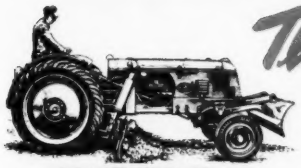
THE 1/3 YARD SCHIELD BANTAM

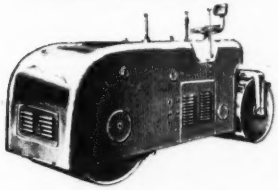
TRUCK MOUNTED TRENCH HOE • SHOVEL • CLAM • DRAGLINE • PILEDRIVER • CRANE

YOU'RE AFTER LOWER COMPACTING COSTS Aren't You?





THE HUBER MAINTAINER
with bulldozer, patch roller, berm leveler, lift loader, mower, broom or snow plow attachments.



HUBER TANDEM ROLLERS
5 Models — 3 to 14 Tons.

HUBER

Then SEE HOW HUBER 3-WHEEL ROAD ROLLERS CAN SAVE YOU MONEY!

Today, you must do a comparable job, but for a lower cost! That means you must get more out of, not only your labor, but your equipment. Experienced road men familiar with Huber equipment say you can do just that! The practical design and rugged construction of Huber 3-wheel rollers places Huber owners at an advantage where low-cost operation is a factor. Huber rollers last longer . . . do more work during their life span . . . and do it so effectively that substantial savings, both on the job and maintenance-wise are effected. Huber 3-wheel roller features that mean savings for you include: "Stay-Put" front end design, fuel economy—either gasoline or Diesel power, heavy continuous steel frame without a bend, 3 speeds forward or reverse, hydraulic controls, fast acting triple-plate clutches and easy accessibility to working parts.

Other Huber road machinery includes tandem road rollers, maintainers and trench rollers. See your Huber dealer or write for bulletins today.

THE HUBER MFG. COMPANY
Marion, Ohio, U.S.A.

HUBER *3 Wheel • Tandem* ROAD ROLLERS *and* MAINTAINERS

TIP-TOP TRAILERS*
LOAD HEAVY EQUIPMENT
FASTER • SAFER • EASIER

Save time and money with this remarkable *proven* trailer. *FASTER* because TIP-TOP provides its own loading ramp. *SAFER* because TIP-TOP eliminates accidents caused by slip-shod blocking, skidding and winching. *EASIER* because equipment is driven on or off under its own power.

NEW 20-TON CAPACITY

In addition to the 7-ton (single axle) and 12-ton (double axle) a new, giant 20-ton, power operated TIP-TOP Trailer will soon be available . . . watch for the announcement.

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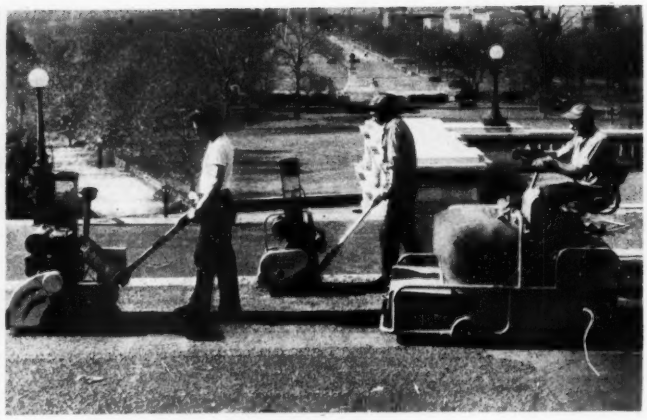
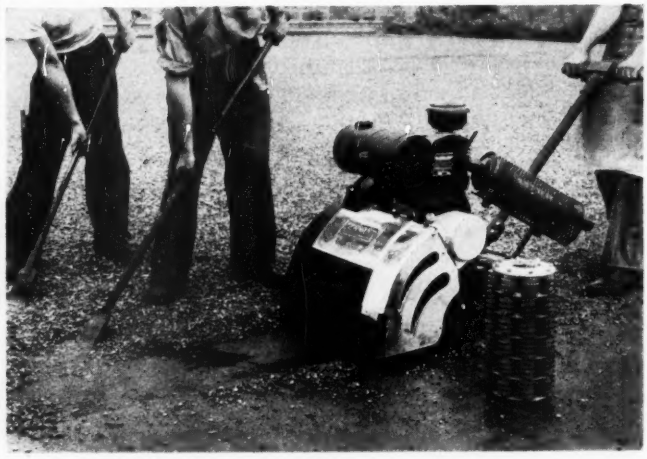


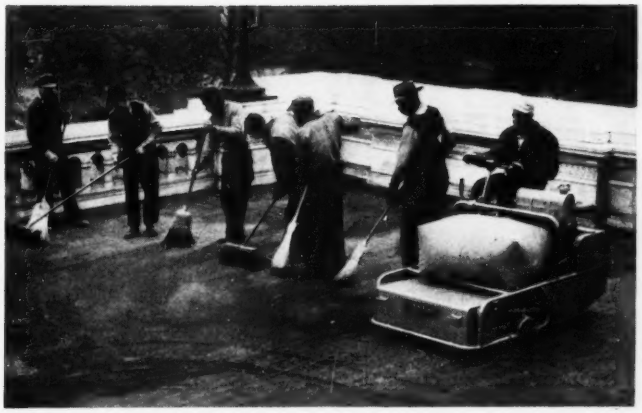
HERE'S THE COMBINATION that saved 50 percent in man-hours in preparing 2 acres of Capitol Terraces, Washington, D. C., for new four-ply felt pitch and slag roof. Mechanical scrapers and sweepers did away with spudding bars and brooms in removing old slag and gravel topping.



NOT EVEN THESE STRONG ARMS can compete with jumbo size (16-in.) scraper. Smaller 8-in. scraper also was used on this job. Rotary cutting device that knocks topping loose is seen next to machine.

Slag Topping Mechanically Removed on National Capitol

SCRAPING SLAG or gravel topping from built-up felt and pitch roofing to prepare the surface for a new cover, can be a slow, back-breaking job. But it wasn't for the Easterday-Duckworth Roofing Co. of Washington, D. C., who smoothed two acres of Capitol Building terraces with mechanical scrapers and sweepers built by the G. H. Tennant Co., Minneapolis, Minn. While eliminating the manual drudgery of the old spudding bar removal method, the machines



HOWEVER ABLY MANNED, brooms are no match for this motor sweeper. Machine sweeps 36-in. path. Both scrapers and sweeper are made by G. H. Tennant Co., Minneapolis, Minn. Contractor is Easterday-Duckworth Roofing Co. of Washington, D. C.

effected a 50-percent saving in man-hours on the smoothing operation.

A powerful fast revolving drum-mounted cutting device on the scraper eats through the heavy roof topping leveling off ridges and leaving an extremely uniform surface. The motor sweeper then scoops up the loose slag and dust from a 36-in. path. Contractors maintain that the mechanical combination does a neater job than can be achieved by hand methods. A special cutter for sawing through pitch, gravel, and thick insulation can be attached to the scrapers when removal of entire roof covering is desired. On this job one 16-in. and one 8-in. scraper were used. Since parts of the capitol terrace meet the street at ground level, trucks and machines could be run directly on to the roof, simplifying machine and material delivery.

And the International Roofers Union of America thinks the new machines are great. Union leaders explained that the union welcomes labor-saving tools as a means of improving both working conditions and earning opportunity for its members.

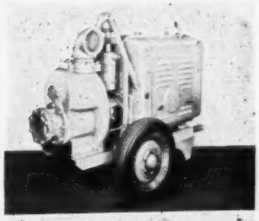
Job-Made Adjustable Spray

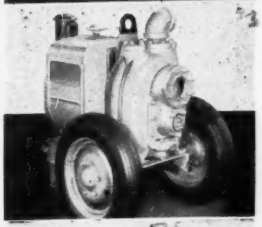
TO SPRINKLE job roads, contractor built simple adjustable spray from 6-in. pipe. Bottom closure plate rides on center-bolt inside pipe and is screwed up to give desired spray. On Chevrolet truck with 1,000-gal. water tank device covers 14-ft. width of road. JIM SEE, superintendent for River Construction Corp., watches his baby operate on Chain of Rocks locks project at St. Louis.

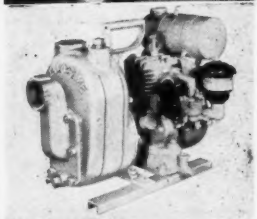
PUMP DESIGN
At it's Best

CMC DUAL PRIME

THE LAST WORD IN PUMP DEPENDABILITY







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Write today for latest illustrated catalog. CMC DUAL PRIME pumps are available in sizes from 1½" to 10"—capacities from 3000 to 200,000 gallons per hour.

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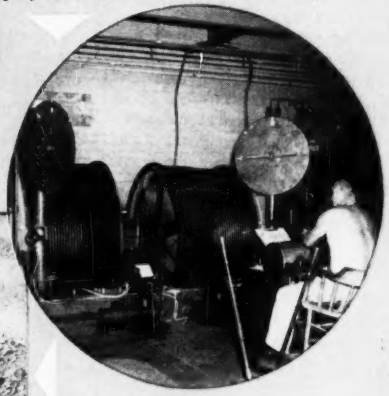
WATERLOO, IOWA

Improved Performance with LAY-SET PREFORMED

Suspended between heaven and earth is this 4-ton, 10-foot square cupola which enhanced the beauty of a 19th Century building. Serving only as an ornament, the cupola was finally condemned. Here was a job for a contractor with the right equipment. Contractors everywhere know that the *improved performance* of LAY-SET Preformed Wire Rope . . . and ACCO Registered Wire Rope Slings . . . makes any job easier . . . reduces costs.

Up-to-date hoisting machinery, an alert operator, and LAY-SET Preformed Wire Rope mean greater safety and freedom from shutdowns. Coal mine, iron mine, "moly" mine . . . wherever a hoisting or haulage rope is used . . . LAY-SET Preformed means *improved performance.*



Down in the pit, out on the road, the power shovel digs in and changes the earth's profile. Rope life may be long . . . or short. LAY-SET Preformed is engineered to give *improved performance* . . . to make the rope last longer.

***Improved performance** comes from a combination of top quality wire rope PLUS correct recommendations. Hazard offers you this combination in LAY-SET Preformed PLUS a nation-wide distributor organization. Always ask for LAY-SET Preformed . . . the Green Strand Wire Rope.*

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LAY-SET Preformed GREEN STRAND WIRE ROPE

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"More hauls, fewer overhauls with Gulf Quality Lubricants and Fuels"

says Mississippi Levee Contractor

Pioneer Contracting Company, Memphis, Tennessee, has a big share of the new levee construction work at Fitler, Mississippi, and south of Vidalia, Louisiana. Gulf quality lubricants and fuels are helping this contractor keep equipment on the job and operating efficiently.

EARTH-MOVING for a Mississippi levee project is measured in the millions of yards! It is the kind of job on which the contractor is not likely to take chances with his equipment. He wants the best lubrication and the most efficient fuels to insure top performance and prevent costly mechanical delays.

That is why Pioneer Contracting Company selected Gulf quality lubricants and fuels for its big levee project, which involves moving over 4 million yards on a tough time schedule—a grueling test for men and equipment.

Pioneer Contracting Company, and many other leading contractors, use Gulf quality lubricants and fuels as basic profit insurance. They know that Gulf products make the job run smoothly and efficiently — keep operating costs at rock-bottom levels.

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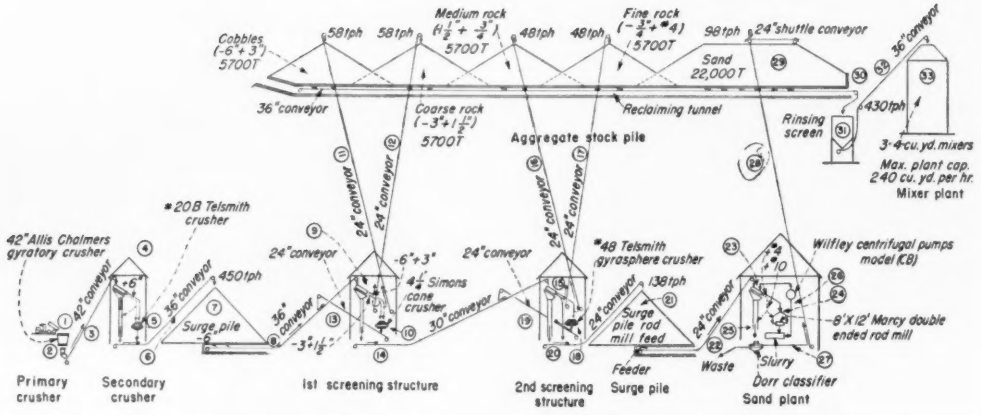
Flexible Aggregate Plant for Clark Hill Dam



FLOW DIAGRAM of processing plant reveals simple, but high-capacity, layout for producing sand and four sizes of crushed rock at a total rate of 450 tons per hr.

LEGEND

1. Unloading ramp
2. Superior McCully gyratory crusher, 42 in.
3. Conveyor belt, 42 in.
4. Robins Gyrex double-deck screen, 5x14 ft.
5. Telsmith gyratory secondary crusher, 20 in. No. 20-B
6. Conveyor belt, 36 in.
7. Surge pile
8. Conveyor belt, 36 in.
9. Two Telsmith double-deck screens, 5x12 ft.
10. Symons cone crusher, 4¼ ft.
11. Conveyor belt, 24 in.
12. Conveyor belt, 24 in.
13. Conveyor belt
14. Conveyor belt, 30 in.
15. Two Telsmith double-deck Vibro King 22-P 5x12-ft. screens
16. Conveyor belt, 24 in.
17. Conveyor belt, 24 in.
18. Telsmith gyrasphere crusher, No. 48 48 in.
19. Conveyor belt, 24 in.
20. Conveyor belt, 24 in.
21. Surge pile
22. Conveyor belt, 24 in.
23. Two double-deck Tyler Tyrock 5x12-ft. screens
24. Double-ended Marcy rod mill, 8x12 ft.
25. Dorr sand classifier
26. Wilfley slurry pump
27. Sand conveyor
28. Conveyor belt, 24 in.
29. Sand storage pile, 22,000 tons
30. Conveyor belt, 36 in.
31. Rinsing screen
32. Conveyor belt, 36 in.
33. Mixing plant, 240 yd./hr.

FLEXIBILITY with high-speed production to obtain the desired proportion of each size to meet specifications was the primary objective in the design of the aggregate plant at Clark Hill, the $60,000,000 multi-purpose dam under construction 22 mi. upstream from Augusta, Ga., on the Savannah River. As on all major Corps of Engineers projects, sand to meet specifications must be made from crushed rock.

Clark Hill Dam is the first major project in the comprehensive development of the Savannah River Basin, which drains a substantial part of Northeast Georgia and Southwest South Carolina. The dam is a combination earth-fill and concrete structure. It will be 5,690 ft. long, of which the concrete middle section will be 2,282 ft. Maximum height of the concrete portion is 200 ft., while the earth embankments will be 155 ft. high. More than a million cu.yd. of concrete and 3,300,000 cu.yd. of earth will go into the dam.

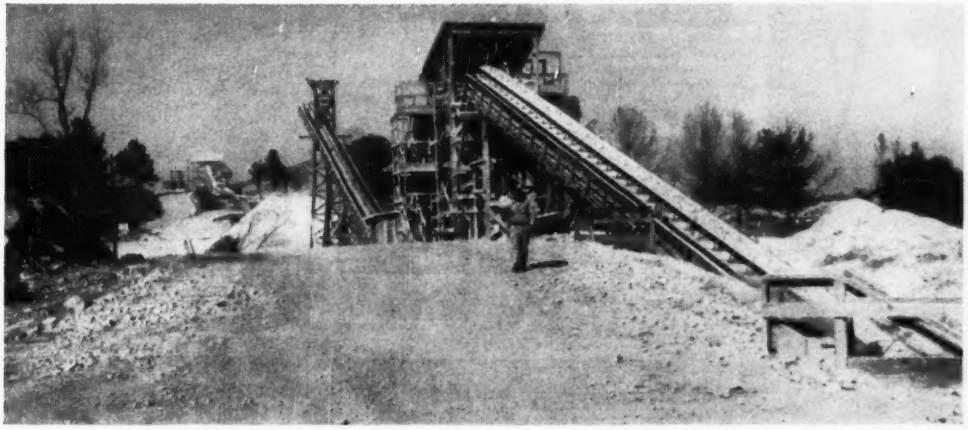
A great deal of advance planning and engineering was necessary to design and build the compact, straight-line production plant, which is an outstanding example of large-scale aggregate production of low-cost materials.

Rated at 450 tons per hr., the aggregate plant was designed by Allstates Constructors, Inc., who also are general contractors for construction of the Clark Hill project. Patchen and Zimmerman, engineers of Augusta, Ga., assisted with the design and prepared detailed plans.

The $26,456,197 contract of Allstates includes materials and the construction of the concrete section of the dam and spillway, the earthwork for river control after completion of the dam, and the installation of all control equipment for regulation of river flow.

Material for the aggregate plant is obtained from a near-by granodiorite quarry. Pioneer work was with wagon drills to develop the face, entries and ramps. Based on tests, the contractor changed from conventional forged bits to detachable bits with Carboloy inserts. Secondary drilling is done with jackhammers and loading

NEAR-BY QUARRY supplies rock for all coarse and fine aggregates for Clark Hill Dam. Main drilling is by churn drills and wagon drills, with some secondary drilling with jackhammers. Two Marion 3½-yd. shovels load Euclid end-dumps for haul to receiving hopper over primary crusher.



FROM PRIMARY CRUSHER all material goes through secondary crusher shown here without intermediate storage.

into Euclid rear dump trucks is by 3½-cu.yd. Marion diesel shovel, a Model 6 Northwest and a 54-B Bucyrus-Erie.

Diamond drillings revealed that the quarry is located on a granite dome, or intrusion, of rather small area. It is completely surrounded by gneiss which is unsuitable for aggregate because of its "shabby" characteristics. This condition limited the quarry to the relatively small area on top of the dome. To avoid excessive stripping of the gneiss and deep weathered overburden, and to obtain sufficient tonnage, it is necessary to work downward rather than laterally. This will leave an excavated area 50 ft. below the ground surface of the valley and 25 ft. below normal river level.

Primary drilling is by three Bucyrus-Erie churn drills and 14 wagon drills; secondary drilling, after blasting, is done with jackhammers. Compressed air for the quarry operations is supplied by two 3,000 and two 1,000 Ingersoll-Rand stationary compressors. The quarry-run stone is loaded into 11-yd. Euclid rear-dump trucks for hauling to the primary crusher.

Material from the quarry flows in a straight line through the crushers and screen to storage in separated sizes, then by conveyor belt to the mixer plant. From here the concrete goes into 4-yd. buckets, hauled on standard-gage railroad cars to the damsite for placement.

Layout of the plant includes two crusher operations and two

(Continued on page 64)

JOE SAYS IT'S LIKE RIDING ON A CLOUD
SINCE WE INSTALLED VELVETOUCH ALL-METAL
CLUTCH FACINGS AND BRAKE LININGS
You'll note the difference, too . . . in smoother operation that cuts fatigue and engine wear. In more dependable starts and stops. And in extra service between teardowns. Because Velvetouch all-metal clutch facings and brake linings are heavy-duty built to give you longer wear, more uniform performance. They can't rot in oil . . . are not affected by moisture. They run cooler . . . install easier . . . and actually cost less on the basis of work done. Specify genuine Velvetouch on your next order . . . and get the operating advantages found only in all-metal construction.
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Chassis Platform Tires $975. Tilt Control Winch and Electric Brakes Optional.

RAY MILLER RESEARCH ENGINEERS
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(Continued from page 63)

screening structures with recirculating features to vary operations for controlled production of sizes. An unusual feature of the plant is the use of a Marcy 8x12-ft. double-end feed rod mill for wet grinding sand and a Dorr bowl classifier for dewatering.

The quarry-run stone is dumped into the primary crusher and reduced to a maximum of 7 in., then passes by belt to the secondary crusher where it is reduced to maximum 6 in. Control on sizes is first exercised at this point by either bypassing or crushing in the 20-B Telsmith secondary. Material from the secondary crusher plant is sent by conveyor belt to a surge pile. A vibrating feeder under the surge pile loads the belt used to transport the rock to the first screening structure.

At this point 3- to 6-in. cobbles and coarse rock, 1½ to 3 in., are screeded out and diverted to stockpile. A 4¼-ft. Symons cone crusher installed here further reduces the material to smaller sizes. Chutes are arranged to permit flexible selection of crusher feed from either 6- or 3-in. maximum size, according to requirements. Tailings from the crusher are recirculated over the screens.

Sizes smaller than 1½ in. are conveyed to the second screening structure where minimum rock from ¾ to 1½ in. is developed at a rate of 48 tons per hr. and stockpiled. A 4-ft. Telsmith gyrasphere crusher, in closed circuit with the screens, is used for further fine reduction. Fine rock from No. 4 to ¾ in. is likewise stockpiled. Fines minus ¼ in., together with selected amounts of ¾- and 1½-in. maximums, are then stored in a surge pile ahead of the sand plant.

The sand plant, as originally set up, included an 8x12-ft. Marcy rod mill in closed circuit with two 5x10-ft. Tyrock double-deck vibrating screens, equipped for separation of No. 4 and No. 10 mesh. Feed conveyed to the screens from the surge pile was first separated at No. 4 with the oversize going to the rod mill. Two 6-in. Wilfley pumps returned the rod mill slurry to the screens.

The arrangement provided for a selective return to the rod mill of a portion of the oversize of the No. 10 separation as an aid to final gradation control.

In the initial stages of the operation it was soon discovered that the recirculation was not needed;

(Continued on page 66)

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And where you need maximum traction for rock work, strip mining, and other severe operations, get the tire with the toughest, most aggressive tread ever built—Firestone Rock Grip. It will be on the job after other tires are on the scrap pile.

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When you buy Replacement Tires or when you buy New Equipment specify —

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OFF-THE-HIGHWAY TIRES

FIRST STORAGE PILE in system is between secondary crusher and first screening plant. Discharge from crusher piles up over reclaiming tunnel, from which raw aggregate is moved to first screen tower at left.

RAW AGGREGATE moves from reclaiming tunnel to first screening plant by 36-in. belt. Two largest sizes of crushed rock are screened out here for stockpiling at right over final reclaiming tunnel.

(Continued from page 64)

in fact, the problem developed to keep the sand from grinding too fine. This was solved by eliminating the closed circuit. It was found that gradation could be controlled by varying the rod load, the size and amount of coarse feed to the mill and the grinding water.

The sand plant feed contains all the fines made in the reduction crushers. These are separated on the screen ahead of the rod mill and bypassed directly to the classifier. The rod-mill discharge is pumped directly to the classifier instead of being returned to the screens. This results in a small percentage of oversize of the specification, but since all the sand is going to the one mixer plant, the oversize is compensated in the mix design.

It is believed that this is the first large-scale plant manufacturing granite sand. Four sizes of stone are produced, including 3 to 6 in., 1½ to 3 in., ¾ to 1½ in. and No. 4 to ¾ in. Manufactured sand gradation, U. S. Standard square

TOWER STACKERS pile processed material over final reclaiming tunnel. Sand stacker ends in shuttle for wider spread. Three towers in background are first and second screening plants and sand plant. Belt in upper right is for wasting excess fines.

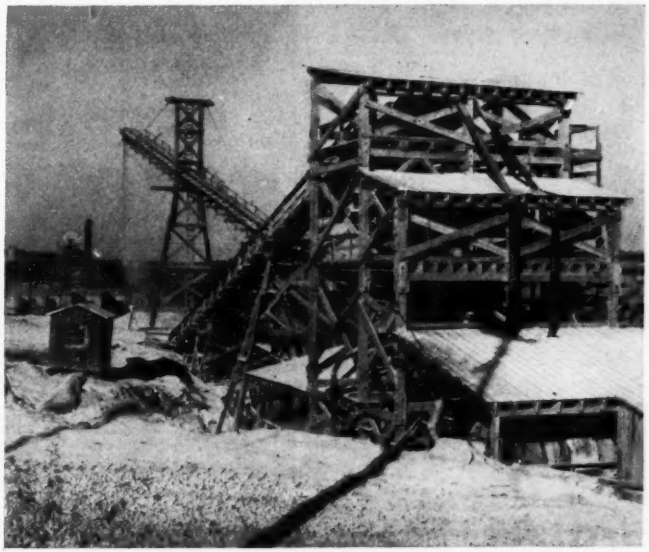
mesh percent by weight retained, meets the following sieve specification. The analysis is applied to the sand passing ¼ in., this excluding the previously mentioned oversize.

	Percent Retained		
Sieve Size	*Min.*	*Desired*	*Max.*
No. 4	3	5	7
No. 8	12	17	22
No. 16	11	16	21
No. 30	14	19	24
No. 50	17	21	26
No. 100	14	19	24
Minus 100	0	3	6

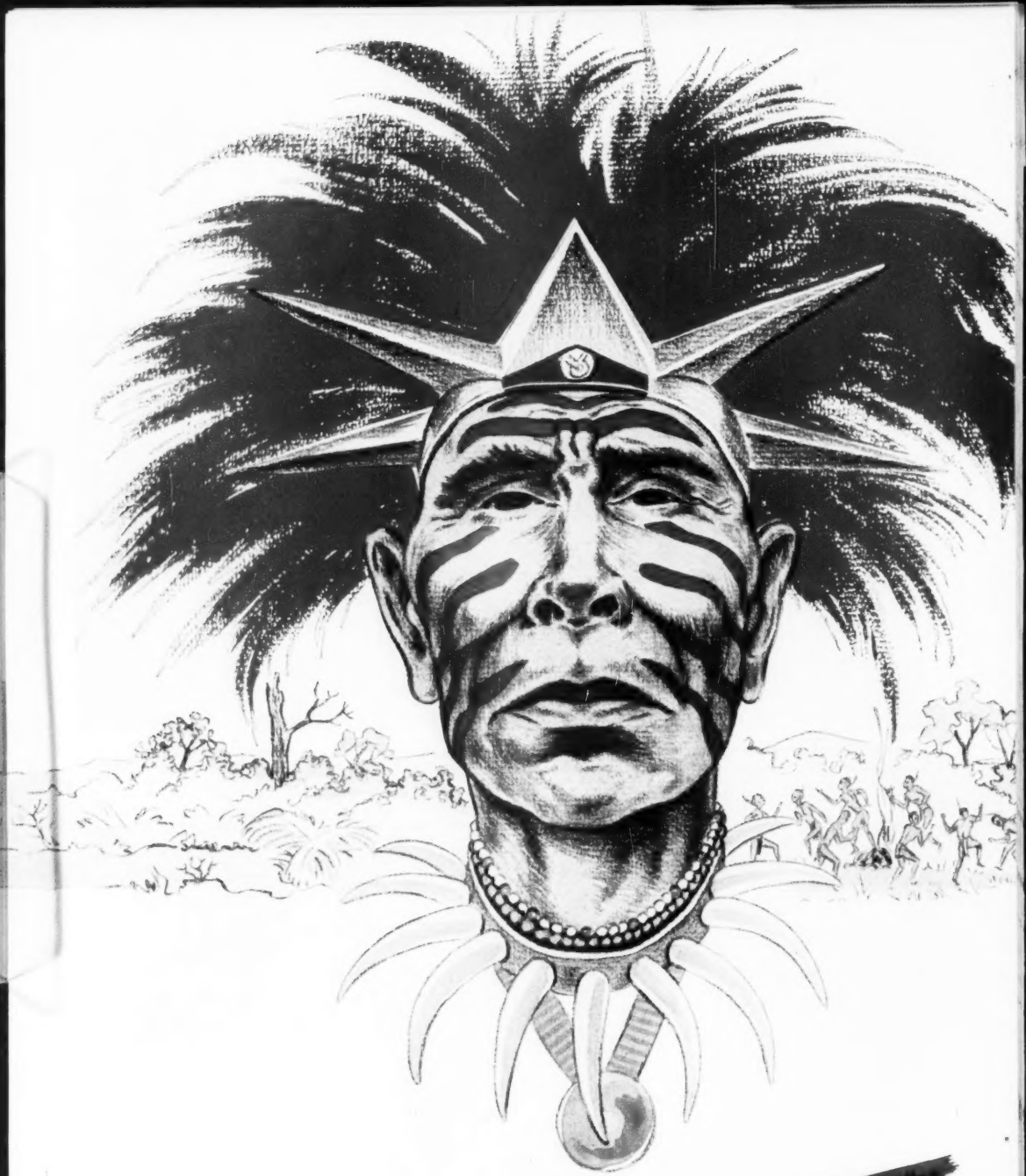
All materials of specific sizes are stored in five piles parallel to point of manufacture. Beneath the storage pile runs a 700-ft. reclaiming tunnel of corrugated plate with a concrete floor. Material is fed on to a 36-in. conveyor belt supplying the mixer plant. A rinsing screen is installed at the transfer plant between the tunnel and the mixer plant.

Conveyors are operated at about 250 ft. per min. throughout the entire system. Slopes as steep as

(Continued on page 70)



COMPACT SAND MANUFACTURING PLANT contains big Marcy rod mill and Dorr classifier. Excess fines are wasted by conveyor at left. Concrete mixing plant is at far left.



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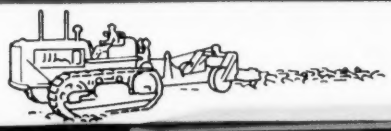

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Their starting and combustion systems, fuel feed, speed governing, torque control, lubricating methods and overall rugged construction account for their superior performance and long-lived stamina.

Since reliable, economical power is "good medicine" for any power-using business, it will pay you to contact your International Industrial Power Distributor. Get International Diesels on your jobs now.

INTERNATIONAL HARVESTER COMPANY, Chicago

An International TD-18 Diesel Crawler fills its 8-yard scraper quickly on this tough, deep-sand road job. Latest model, with increased drawbar horsepower and many improvements, is now available.

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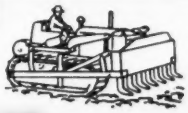
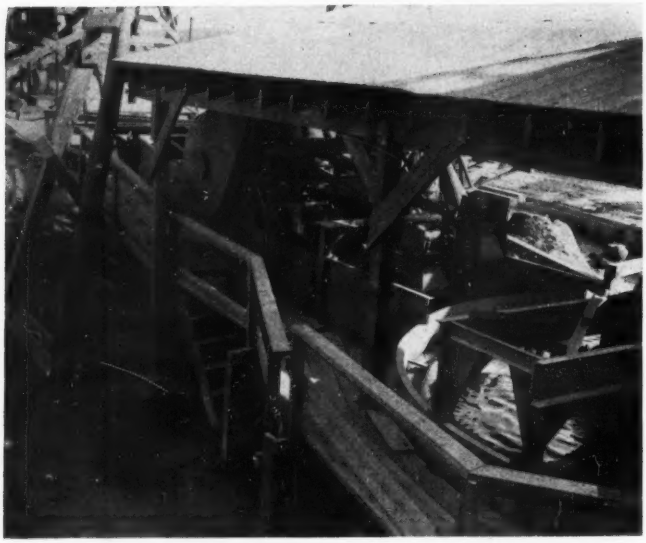




DORR CLASSIFIER removes large proportion of excess fines from sand.

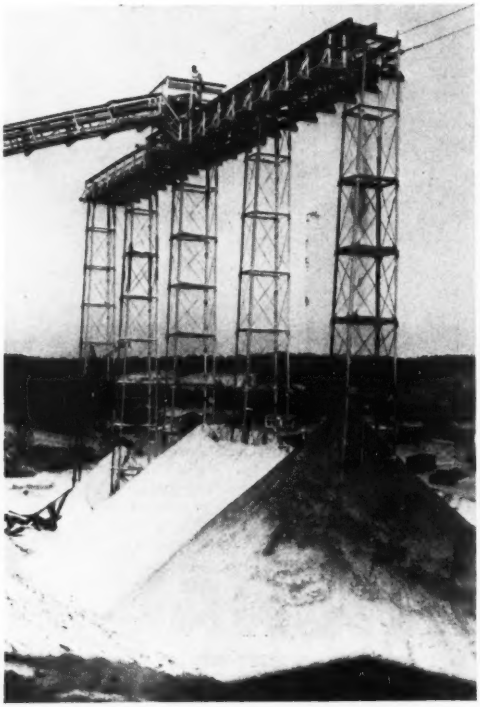
(Continued from page 67)

19 deg. are met by several of the conveyors and the conveying system is made up of 15 flights, varying in length from 120 to 1,400 ft.

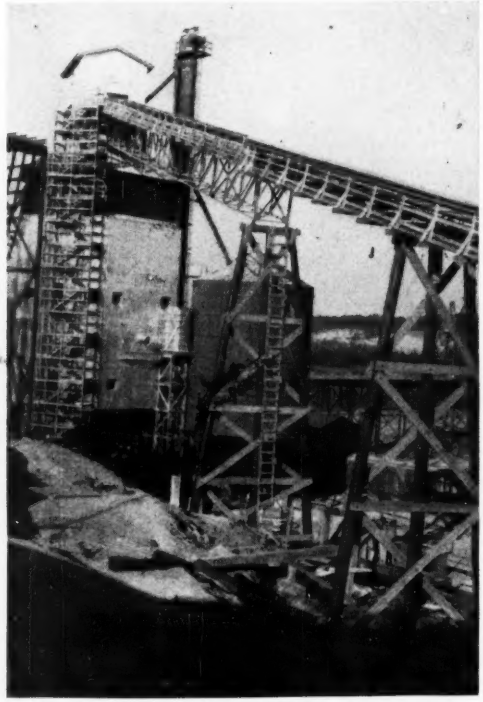
Bulk cement arrives at the plant in hopper-bottom railroad cars, is dumped into a screw conveyor and raised by bucket elevator to three silos, two with 7,300 bbl. capacity each, for cement, and one of 4,800 bbl. for natural cement. Recovery from the silo to the mixer plant goes up the same elevator.

The mixer plant has three Koehring 4-yd. tilting mixers with capacity of 240 yd. per hr. Batching in the plant, handled by C. S. Johnson Co. equipment, is under automatic electrical control until the mixers have completed their cycle. A flatcar carrying three 4-yd. buckets is brought under the mixer plant, and when spotted in position, is loaded by emptying the mixers with the manual electrical control. Four 10-ton locomotives haul the concrete cars to the dam.

A steel construction trestle, with columns and footings embedded in



SHUTTLE CONVEYOR carried on five towers spreads sand out over final reclaiming tunnel.



FINAL DESTINATION of all aggregate is this big mixing plant housing three 4-yd. mixers turning out 240 yd. per hr. Bulk cement is stored in silo at right of plant.

the concrete, running the length of the dam, carries two standard-gage tracks for the concrete trains, and a 32-ft.-gage track supporting three American R-20 Revolvers 60 ft. high. These cranes have 200-hp. hoists and 125-ft. booms. They are rigged to handle a 4-yd. bucket of concrete weighing 11 tons at a reach of 115 ft.

Layout of the plant is shown in the accompanying flow sheets, while the photographs show several details of operations. On one side of the production line and in close proximity for ease in control, are located the administration buildings, shops and warehouses. The office buildings, compressor building, machine shop, warehouse, repair shop and ice plant are prefabricated metal buildings which are salvageable.

Detailed Processing

The processing of the quarry-run material to use in the mixing plant is accomplished in a compact arrangement in keeping with ground terrain and straight-line production. Mechanical units are designated by a number in parenthesis which corresponds to its number on the flow sheet and legend. Sizes of units and belt lengths are shown in the legend.

From the Euclid rear dump trucks, the quarry-run granite is dumped (1) directly into a 42-in. Superior McCully gyratory crusher (2) from reduction to a round 7-in. maximum size. A 42-in. conveyor belt (3) carries the primary crusher run to the Robins Gyrex double-deck screen (4) and Telsmith gyratory second crusher (5). The scalp has a 7-in. opening on the secondary crusher. Second deck on the screen has 3½-in. opening arranged so that minus 7 to plus 3½ in. can be bypassed. All minus 3½ in. is bypassed.

Material then flows on a 36-in. conveyor belt (6) to the surge pile (7) which contains all minus 6 material for storage and reduction. From here it is fed through a gate on to a 36-in. conveyor belt (8) to the first screening structure where the two Telsmith double-deck screens (9) are arranged so that in the first screening either one of the retained materials can be stocked or crushed. Tailings of the Symons cone crusher (10) are recirculated over the screen for rescreening. If it is desired to make more of 1½ to 3 in., then cobble is sent by conveyor belt (13) through the crusher again and rescreened. Cobbles 3 to 6 in. are conveyed to the 5,700-ton storage pile by a 24-in. conveyor belt (11) and the 1½- to 3-in. material is sent to coarse rock storage of 5,700-ton capacity by a 24-in. conveyor belt (12).

All material under 1½ in. is fed to the 30-in. conveyor belt (14) to the second screening structure which has a duplicate arrangement as in the case of the first screening. Recirculation of material is possible to give a greater amount of medium or fine gravel. This position has a Telsmith gyrasphere crusher (18) and two double-deck Vibro King 22-F Telsmith screens (15). Material is recirculated on 24-in. conveyor belt (19) and ¾- to 1½-in. size is sent by 24-in. conveyor belt (16) to 5,700-ton medium rock storage while No. 4 to ¾ in. is sent on a 24-in. conveyor belt (17) to 5,700-ton fine rock storage.

The material from the second screening structure flows on 24-in. conveyor belt (20) to the surge pile (21) for feed to the rod mill on a 24-in. conveyor belt (22). The sand plant contains two double-deck Tyler Tyrock screens (23), a double-ended March rod mill (24) and a Dorr sand classifier (25). Recirculation is arranged to obtain desired size proportions. The sand is conveyed on a 24-in. conveyor belt (28) to the shuttle conveyor which distributes sand to the 22,000-ton sand storage pile (29).

Final Rinsing

The material from the storage piles is fed to the 36-in. conveyor belt in the 700-ft. long corrugated plate and concrete reclaiming tunnel. This 36-in. conveyor ends at the rinsing screen where all materials more than ¾ in. are washed to eliminate the fines accumulated during storage and transportation. The final run of material is on a 36-in. conveyor belt to the top of the mixing plant.

The mixer plant contains three 4-yd. Koehring mixers, with two 7,500-bbl. cement silos for portland cement and one 4,800-bbl. silo for natural cement. The mixer plant has a capacity of 240 yd. per hr.

Allstates Constructors, Inc., a combination of several firms headed by Walsh Construction Co. of New York, is general contractor on the project. C. D. Riddle is project manager; G. E. Murphy is general superintendent; T. F. Taylor is job engineer and C. H. McLeod is administrative assistant.

For the South Atlantic Division, U. S. Corps of Engineers, Col. Paschal N. Strong is District Engineer at Savannah; Grady L. Bain is resident engineer; and A. C. Marane is assistant resident engineer.

Principal Equipment at Clark Hill Dam

QUARRY:

Ingersoll-Rand FM-2 Wagon drills

3½-yd. Marion Shovel, Model 111-M

Euclid Truck (rear dump) 11-yd. with Cummins diesel engine

PRIMARY CRUSHER:

42-in. Superior McCully gyratory crusher, power supplied by a 250-hp., 600-rpm. 2,300-v. 3-ph. slip-ring Westinghouse motor

SECONDARY CRUSHER:

20-in. Telsmith No. 20B gyratory crusher—power supplied by 125-hp., 575-rpm. 2,300-v. 2-ph. slip-ring General Electric motor

Robins Gyrex 5x14 ft. C-10 double-deck screen—power supplied by a 15-hp. electric motor

FIRST SCREENING STRUCTURE:

Two 5x12-ft. scalpers, Telsmith 26-S double-deck screens; power by 15-hp. motor

Symons 4¼-ft. cone crusher—power supplied by 150-hp., 2,300-v. 3-ph. 1,150-rpm. electric motor

(At this structure cobbles and coarse aggregate taken out to storage piles over the reclaiming tunnel)

SECOND SCREENING STRUCTURE:

Telsmith gyrasphere 48-in. No. 48 crusher—power supplied by 150-hp., 2,300-v. 3-ph. 870-rpm. electric motor

Two 5x12-ft. double-deck Vibro King 22F Telsmith screens—power supplied by 10-hp. motor

(At this structure medium and fine aggregate taken out)

SAND PLANT:

Double-ended 8x12-ft. Marcy rod mill—power supplied by a 350-hp. electric motor, to be used for making sand

Dorr sand classifier—power supplied by a 15-hp. electric motor

Two 5x12-ft. double-deck Tyler Tyrock screens—power supplied by 10-hp. electric motor

(At this structure sand is discharged to the sand storage pile)

CONVEYOR SYSTEM:

Conveyors varying in size from 42 in. to 24 in. are used for transportation of all aggregates from the primary crusher to the mixer plant

ICE PLANT:

Five 30-ton Vilter PakIce Machines and one Vilter water cooler

MIXER PLANT:

Three 4-yd. Koehring mixers

Two 7,500-bbl. cement silos for portland cement, one 4,800-bbl. silo for natural cement

CONSTRUCTION TRESTLE:

Three American Revolver electric gantry cranes at 20-ton capacity at 75-ft. radius

Five 10-ton Plymouth locomotives

"Our FORD F-8 pulled a 25-ton shovel up 4th St. Hill!"

Roadside Report

FORD TRUCKS

W. A. WADSWORTH

DAYTON, OHIO

"RECENTLY we had occasion to place our 25-ton shovel at the top of East 4th Street Hill in Dayton," reports W. A. Wadsworth, General Manager of Southern Hills Pit, Inc. "We did this with our Ford F-8 Big Job without the assistance of a second truck and had a comfortable reserve of power. To our knowledge, no other make of truck has pulled the hill our F-8 did, with a similar load."

Owners and drivers sing the praises of the new Ford Big Jobs. *Owners* like Big Job extra power and low cost operation. They claim the new 145-horsepower engine outsaves engines much smaller in size. *Drivers* are enthusiastic about the ease and comfort of the Million Dollar Cab and its Ford Level Action suspension. *Both* are impressed by Ford Bonus Built construction, characteristic of 139-plus models in a full truck line. Bonus Built is the superstrong construction that contributes to long truck life.

ONLY THE FORD BIG JOB

HAS ALL THESE FEATURES!

- ★ New 145-h.p. Ford V-8 engine for top performance.
- ★ Ford exclusive concentric dual-throat carburetor for more power, more economy.
- ★ New heavy duty 5-speed transmissions for operating flexibility.
- ★ Big Ford power-operated brakes for sure-footed stopping; rear 16-inch by 5-inch on the F-8.
- ★ Ford Super Quadrax 2-speed axle with vacuum shift for performance flexibility in Model F-8 (single speed axle also available); single-speed Quadrax Hypoid Axle in Model F-7.
- ★ Large diameter (10-inch) wheel bolt circle with 8 studs to allow for extra-strong hub construction.
- ★ Million Dollar Cab with Ford Level Action suspension for greater driving comfort.
- ★ Nationwide service from over 6,400 Ford Dealers.
- ★ Ford Bonus Built construction for long truck life.

Gross Vehicle Weight Ratings: F-8 up to 21,500 lbs., F-7 up to 19,000 lbs. Gross combination ratings: F-8 up to 39,000 lbs., F-7 up to 35,000 lbs.

FORD 1949 *Bonus Built* TRUCKS 1949

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USING REGISTRATION DATA ON 5,444,000 TRUCKS, LIFE INSURANCE EXPERTS PROVE FORD TRUCKS LAST LONGER!

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295,000 Yards

a month

A fleet of 24 Cummins-Powered Euclid Rear Dumps moves an average of 295,000 *yards* of earth *a month* on Dick Construction Company's job at Locust Gap, Pa.

Their schedule calls for a one and one-half mile round trip every 12 minutes . . . 10 to 15-yard loads on an 8 to 10 per cent adverse grade extending all the way to the unloading point . . . 84 hours on the job every week.

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*Records show yearly fuel costs for a Cummins-Powered earth mover to be as much as $1,138.80 less than fuel costs for another make of diesel doing similar work.

The Cummins Diesel in this Euclid is one of the Cummins Diesels powering equipment used on all the Dick Construction Company and A. E. Dick Contracting Company jobs.

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- Fast work cycles
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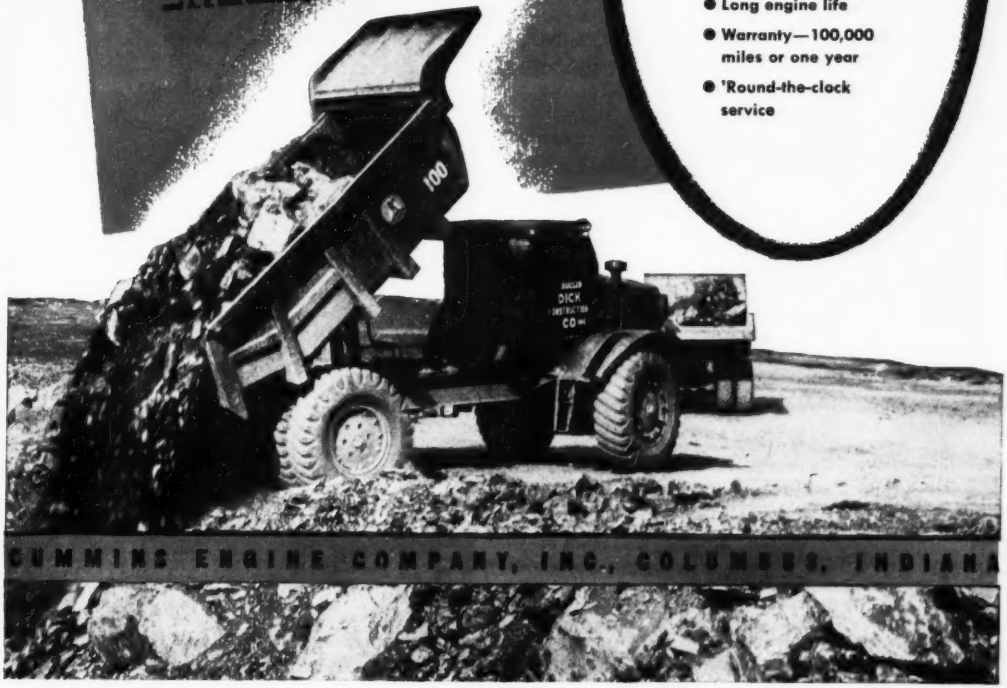
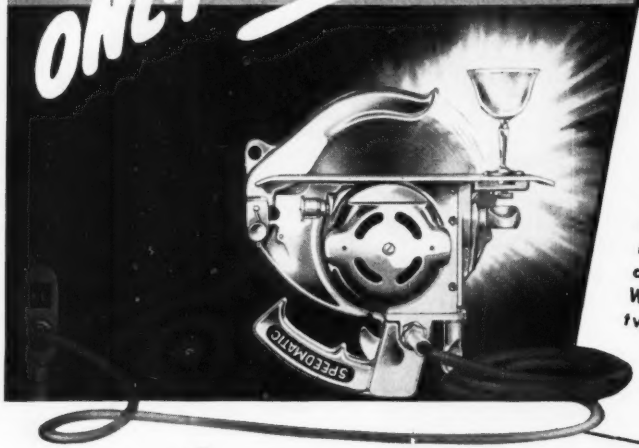


CUMMINS ENGINE COMPANY, INC., COLUMBUS, INDIANA

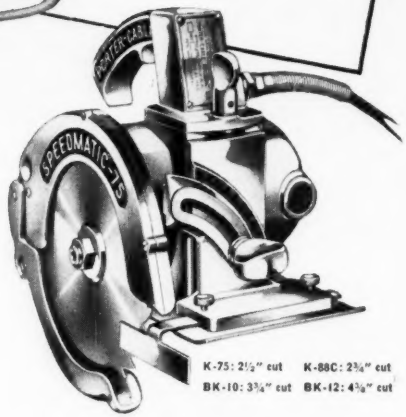
ONLY ONE SAW passes this BALANCE TEST!



Try this simple test before you buy any saw!

Stand the Speedmatic upside down, on its handle. Place a full glass of water on the extra-broad shoe. Start the motor . . . and you'll be amazed! NOT A DROP OF WATER SPILLS due to starting twist or jerk! That's . . . **REAL BALANCE!**

PORTER-CABLE Speedmatic



K-75: 2½" cut K-88C: 2¾" cut
BK-10: 3¾" cut BK-12: 4⅝" cut

The simple but rigorous test (above) is NOT a "stunt". It proves in a *practical* way—and beyond any doubt—that balance is built right into the Speedmatic. For this reason, it performs better . . . lasts longer . . . and produces more work than any portable electric saw on the market today!

Balanced For Easier Handling

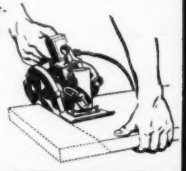
Notice that the handle is ON TOP—at the center of gravity—exactly where it should be. If you hold the Speedmatic with just two fingers, it does not "nose down" or tip. It's all ready to go to work in a balanced, horizontal cutting position.

Balanced For Truer Sawing

The unusually broad shoe assures steadier rest on the work. No tilt, twist or tip. Does not veer or cramp in the work. And the moving parts are so perfectly balanced that the Speedmatic starts without dangerous power twist or jerk.

Balanced For Bevels And Angles

Unlike many saws, the compact, balanced design of the Speedmatic permits the carpenter to see the cutting line *at all times* —even for bevels and angles. For vertical or overhead cutting, balanced light-weight relieves the operator of tiring strain. At end of a cut, the saw rests *safely* on the work—because the blade is on the right of the base, where it should be.



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Speedmatic—The Line of Balanced Design

Porter-Cable Machine Co.

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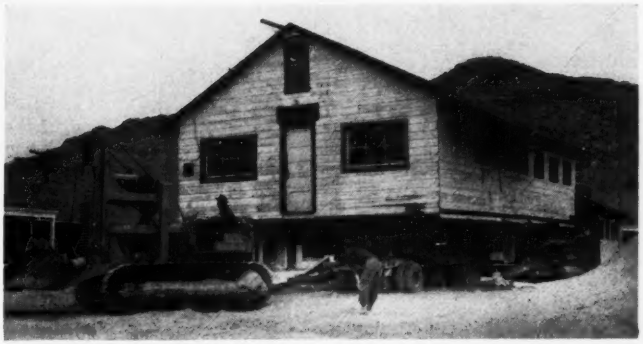
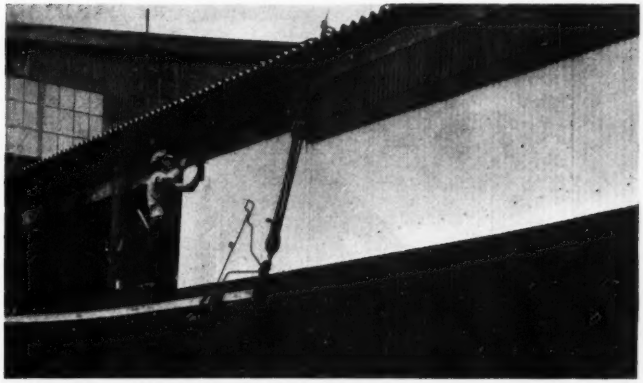
Manufacturers of SPEEDMATIC and GUILD Electric Tools

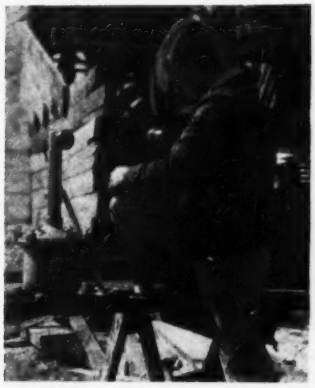


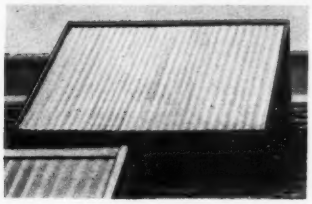
VERSATILE TRACTOR, a Caterpillar diesel D6 machine equipped with Traxcavator on front end, owned by E. L. Fait Construction Co., of Twin Falls, Idaho, is used not only to move 26x50-ft. building from Wendover, Utah, to new site ½ mi. distant, but also to grade and level Motel site and load hoppers at concrete batching plant.

HOW ...they did it

FOR LAYING WATER MAIN in New Orleans, La., Boh Bros. Construction Co. uses Hyster straddle truck to handle 40-ft. sections of 56-in. dia. pipe each weighing 11 tons. Truck 11½ ft. wide, 13 ft. high and 16¼ ft. long straddles trench and lowers pipe to place with aid of cable and slings.







TO ADMIT DIFFUSED LIGHT within industrial building sheathed with Robertson corrugated metal, horizontal bands of Rohm & Haas translucent Plexiglas acrylic plastic are installed as part of siding. Non-corrosive sheets are ⅛ in. thick, measure 33x51 in. and have corrugations matching those of metal siding, so that overlapping at joints presents no problem. Plexiglas sheets are also used to cover skylights (left) on corrugated metal roofing.

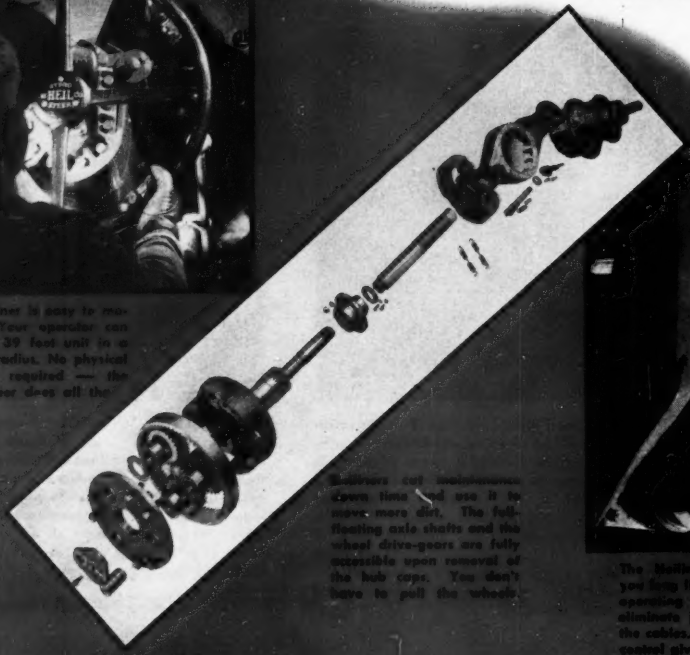
FIELD TESTS OF CONCRETE for entrained air and slump are made at Turtle River Bridge project near Brunswick, Ga., with Central Scientific Co. pressure-type indicator apparatus by laboratory inspector of Georgia State Highway Department. Results show 1-in. slump, 3 percent air and cement factor of 1.73. Mix is 94 lb. cement, 161 lb. sand, 286 lb. crushed stone and 4½ gal. water.

(Continued on page 78)

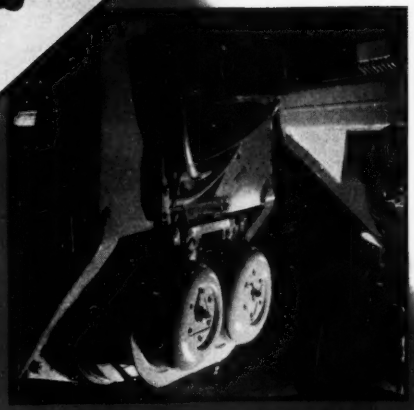
The Heiliner is furnished with either a 16.5-cu. yd. scraper or 18-cu. yd. bottom-dump wagon. The two units are interchangeable.

THE Heiliner Puts More

The Heiliner is easy to maneuver. Your operator can turn the 39 foot unit in a 22-foot radius. No physical effort is required — the Hydro-Steer does all the work.



Scrapers cut maintenance down time and use it to move more dirt. The full-floating axle shafts and the wheel drive-gears are fully accessible upon removal of the hub caps. You don't have to pull the wheels.



The Heiliner's cable power-control unit gives you long life and low-cost operation. The smooth-operating brakes and cushioned clutch action eliminate jerks and shocks — reduce wear on the cables. The large drums run cool. Finger-tip control gives your operator fast, effortless action.

Gives You Faster Haul Cycles

Profit in Your Pocket

1 Because the Heiliner's super-axle, with its overall gear reduction of 153 to 1, provides a low-torque drive that gets every bit of power out of the new 200 hp Cummins Diesel.

2 Because Heil's patented, positive Hydro-Steer prevents nosing, snaking, or jack-knifing—lets your operator run at highest possible speeds, make more round trips.

You can count on larger earthmoving profits, when you have these and many other Heiliner features working for you. Send for complete information about the Heiliner and the complete line of Heil earthmoving equipment. Check the coupon and mail it today.

HEIL

THE HEIL CO.
Dept. 259
3002 W. Montana Street, Milwaukee 1, Wisconsin

Please send me complete information on the items I have checked below:

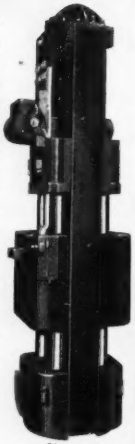
- ☐ **Heiliner**—2-wheel prime mover
- ☐ **Scrapers**—tractor-drawn
- ☐ **Hydraulic Dozers**—specify make of tractor
- ☐ **Cable Dozers**—specify make of tractor
- ☐ **Power Control Units**
- ☐ **Light-Duty Dump Bodies** —specify make of truck
- ☐ **Heavy-Duty Dump Bodies** —specify make of truck
- ☐ **Platform Conversion Hoist**

Name ..... Title .....
Company .....
Address .....
City ..... ( ) State .....

Brute Force
PUTS 'EM DOWN

SUPER-VULCAN
OPEN TYPE
DIFFERENTIAL-ACTING
PILE HAMMERS
18C, 30C, 50C and 80C

You can depend on powerful Super-Vulcan every time for fast, efficient pile driving. Line it up on any type of pile under the toughest conditions and you'll see why Super-Vulcan costs less to operate, drives more piles per dollar. It's rugged, durable, simple in design, easy to operate . . . built to meet the requirements of experienced contractors.



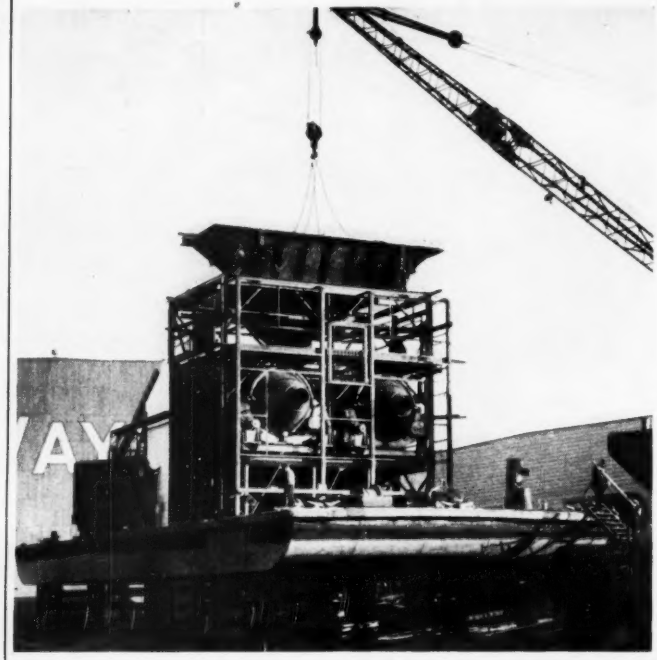
Sizes—
18C-30C-50C-80C
Meet all needs

The open type fits the same leads, uses the same accessories, as Warrington-Vulcan Single-Acting Pile Hammers.

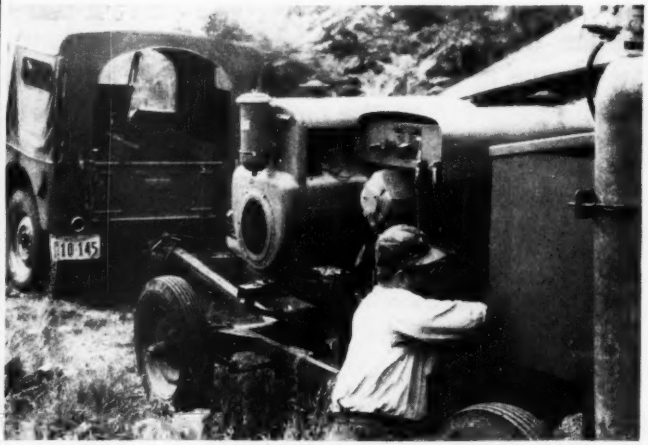
For double driving power on less steam choose Super-Vulcan. Write for details.

VULCAN IRON WORKS
Since 1852
331 North Bell Avenue
Chicago 12 ---Illinois

HOW THEY DID IT... Continued

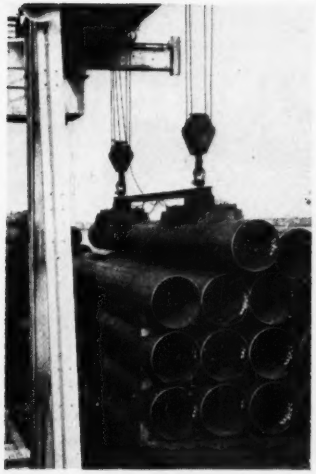


CONCRETE MIXER BOAT for construction of lock and dam for Corps of Engineers on Monongahela River at Morgantown, W. Va., is remodeled by Dravo Corp. at its marine ways, Pittsburgh, Pa. Hull is lengthened 10 ft. and two tilting-type concrete mixers installed to equip floating plant for production of 80 cu.yd. of concrete per hr. Sand, gravel and cement are loaded into batchers on boat by whirler crane. Other cranes lift buckets of concrete from boat for transport to pouring location at dam on small rail cars.

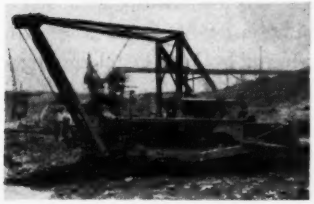


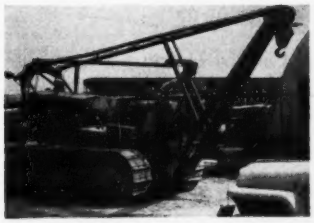
TRAILER-MOUNTED AND JEEP-HAULED are these two General Electric engine-driven welders used to repair corroded high-tension poles along 7 mi. of rough terrain on line of N. Y., N.H. & Hartford R.R. near Stamford, Conn. Special rig with 200-300-ft. long extension cables, devised by Hallen Co. of Long Island City, N. Y., enables welding equipment and repair crew to reach defective poles difficult of access.

HOW THEY DID IT



FOR LOADING 30-IN. DIA. STEEL PIPE on railway cars, Consolidated Western Steel Corp. uses 10-ton gantry crane handling strongback equipped with two rectangular electric lifting magnets fitted with arc-shaped cradles to fit curved surface of pipe. Power for operating crane and magnets is supplied by 75-kw. diesel generator plant. Pipe is shipped for use in 1,840-mi. Texas-New York pipeline of Transcontinental Gas Pipe Line Corp. During peak periods, one operator and two helpers have loaded as much as 5½ mi. of 30-in. pipe in 8 hr.





NOT CONTENT with normal versatility of its bulldozers, River Construction Corp. fitted Caterpillar D8's with job-made crane attachments operated by takeoff winches. Each unit has 12-ft. lift, can travel with 10-ton load, makes stationary lifts up to 16 tons. Contractor finds multitude of uses for rigs on Chain of Rocks locks projects on Mississippi near St. Louis.

Add a BIG *SAFETY* FACTOR to your hoist

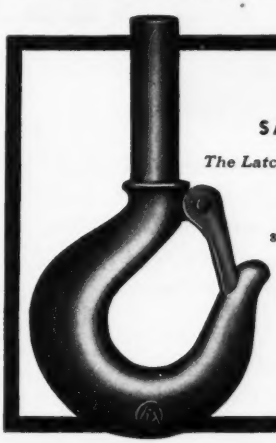
A Laughlin Safety Hook will boost the "safety efficiency" of your hoist many times . . . protecting workers against injury and equipment against damage from accidentally slipping loads.

Make sure your next Hoist is equipped with a LAUGHLIN SAFETY HOOK

Specify "Laughlin Safety Hooks" when ordering new hoists from your distributor. They pay for themselves many times over in accidents avoided.

Play safe — change over your present Hoist Hooks to LAUGHLIN SAFETY HOOKS

Order from your distributor according to the size now on your hoisting equipment . . . or state the capacity of your hoist and he will furnish the correct Laughlin Safety Hook to fit your needs.



LAUGHLIN SAFETY HOOK

The Latch Locks the Load

Drop-forged steel, heat-treated . . . stainless steel spring with pressed steel latch. Cast bronze latch on larger sizes. Available for ½ to 15 ton safe working loads.

There is a **LAUGHLIN SAFETY HOOK** *for every* **HOISTING or MATERIALS-HANDLING JOB**

3310
½ to 15 tons

3220
½ to 15 tons

3316
½ and 1 ton

3315
750 pounds

Send for Laughlin's famous data book of fittings — ask for Catalog #145. THE THOMAS LAUGHLIN COMPANY, DEPT. 1, PORTLAND 6, MAINE.

LAUGHLIN

THE MOST COMPLETE LINE OF DROP-FORGED WIRE ROPE AND CHAIN FITTINGS

Rock-Crushing POWER AT ROCK-BOTTOM COST

Ada County's Universal No. 880 Master gravel plant with 24" twin dual roll crusher and No. 1024 jaw crusher, powered with a 6-71 GM Diesel engine.

Here's a rock-crushing plant that produces up to 200 three-yard truck loads a day using only 45 gallons of fuel in 8 hours. It's owned by Ada County, Idaho, and it is powered with a 6-cylinder General Motors Series 71 Diesel.

In applications like this, all over the country, these rugged 2-cycle GM Diesels are getting more work done—and getting it done for less cost. With power at every downstroke, they deliver a sturdy, dependable flow of power. They're smooth, easy to start and quick to adjust to varying load demands.

As for upkeep—it is always low because of the clean, simple design and precision manufacture found in GM Diesel engines. They are built to "take it" on tough jobs like this—are given rigid "run-in" tests. Then too, they are backed by Detroit Diesel's well-known owner service policy and the ready availability of factory engineered replacement parts.

All this makes a GM Diesel a natural for any job you may have. It's an engine you'll want to learn about, so write today for the complete story.

DETROIT DIESEL ENGINE DIVISION

SINGLE ENGINES.. Up to 200 H.P. **DETROIT 28, MICHIGAN** MULTIPLE UNITS.. Up to 800 H.P.

GENERAL MOTORS

GM GENERAL MOTORS DIESEL POWER

DIESEL BRAWN WITHOUT THE BULK

Barber-Greene

B-G COST SAVING BULLETIN No. 4902

CONTRACTOR LOADS 80,000 YARDS PER YEAR WITH ONE BUCKET LOADER

847831

Reports Loading Cost of 1/2 Cent per Yard

Ashland, Mass. — Backed by years of experience with all types of truck-loading equipment, and close cost accounting on each type, the Ashland Sand and Gravel Company, Inc. reports that the record for lowest cost and fastest truck loading goes to its B-G 545-A Bucket Loader.

In loading approximately 80,000 yards of material yearly—sand, stone, loam, etc., the B-G Loader brought costs down to one-half cent per yard, including depreciation and maintenance as well as operating expense. This low cost also includes the time involved in moving from stock pile to stock pile—and would of course be even lower if the Loader worked from only one stock pile. In reporting these facts, A. N. Leverone, the company's president, further adds, "In our opinion the principle of the continuous flow of material as incorporated into your Bucket Loader guarantees high capacity loading at a steady uniform rate with a minimum of maintenance and operating expense."

Broad Range of Users Cuts Costs with Heavy-Duty B-G Loaders

447673

Modern Controls Aid Operators **Conveniently banked controls help make any man an expert operator quickly. Hydraulic boom hoist is power operated. Hydraulic brakes on main drive wheels.**

84886

Boom Cradles **For fast transport, boom quickly lowers to horizontal position to give low clearance. Two travel speeds—turning diameter is 31 feet.**

Builders, general contractors, state and highway departments, material dealers, aggregate producers, black dirt contractors—all report new low costs in truck loading with the B-G 545-A Loader. This heavy-duty, 3 cubic yards per minute Barber-Greene provides high capacity loading of all free-flowing materials such as stone, gravel, sand, cinders, coal, coke, top soil, fertilizer, etc. Mounted on tractor-type pneumatic tires with automotive steering, the 545-A combines mobility and maneuverability with compactness. It gets around quickly in cramped areas and can be readied in a few minutes for moving from one location to another. With its Spiral Feed and welded steel buckets, the 545-A loads clean—has the ability to dig into bank top soil or shoulder. Completely modern in design the 545-A has centralized operating controls, floating boom, automatic overload release, self-locking adjustable swivel spout, heavy-duty battery, electric starter and other advanced features.

Loader Pays on 4,000 Tons Per Year

"Gives Us More Trucks," says Firm Head

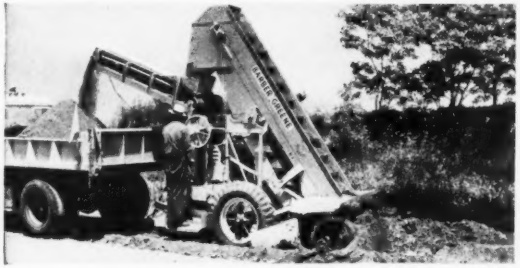
Lake Forest, Ill. — Two years of loading aggregate with a B-G Bucket Loader persuaded the G. L. Blanchard Company to purchase a duplicate machine for loading their stoker coal—although their yearly volume is only 4,000 tons. Now in its second year of service, the additional B-G Loader has proved to be an excellent investment.

E. G. Lindenmeyer, president, reports, "the savings in the loading operation itself are only part of the story. Our real saving is in truck time. During our rush season the machine is invaluable and, in effect, **it gives us more trucks.**"

So far, the G. L. Blanchard Company has handled 39,000 tons of lime, stones, sand and gravel with their first Barber-Greene, and to date their repairs for both machines have totaled zero.

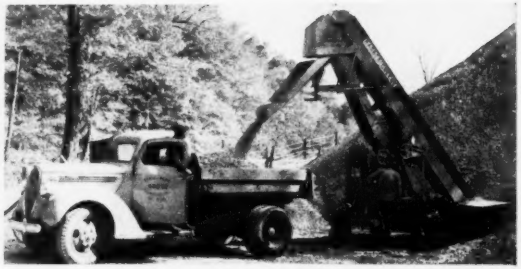
PRD. IN U.S.A.—000 M-4-49-AM

USERS REPORT BROADEST RANGE OF JOBS HANDLED BY VERSATILE BUCKET LOADERS



A621-8

For low clearance and long reach the B-G 522 Loader is equipped with swivel discharge conveyor which has a swing of 140°. Ready for truck towing at 20 m.p.h. with no adjustments. Loader easily converted to Snow Loader.



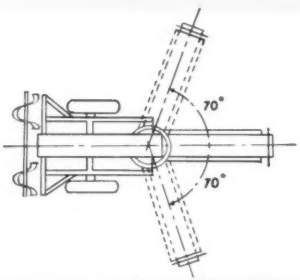
BG-412B-8

The 522 is also available with high boom and swivel spout. If low clearance is not necessary, this model is often chosen as it is lower in initial cost and provides the same capacity, portability and other performance features. The high boom type can be equipped with vibrating screen for scalping oversize.

SAN FRANCISCO FINDS MULTIPLE USES FOR BUCKET LOADER . . . VARIETY OF COST-REDUCING PERFORMANCES REPORTED

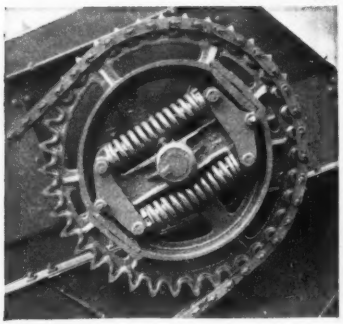
San Francisco, Cal.—When the Park Commission here bought an 82-A Loader with gravity screen, it was for one purpose: namely, beach cleaning. This was the job they had in mind, for the 82-A has gained quite a reputation for removing glass, nails, and other dangerous rubbish from city beaches. It wasn't long, however, before the broader usefulness of the 82-A was discovered. Now it's used for clearing away sand accumulations in the dividing strips on the highway, stripping loam, excavating for park paths, and regular truck loading, along with its beach-cleaning duties.

Milwaukee, Wis.—Elmer Engler Company, landscape gardener here, has been using Bucket Loaders for stripping top soil for the past ten years. Their latest Loader, an 82-A, was delivered in 1947, and since then has loaded and screened thousands of yards of clean top soil—300 to 400 yards per day—stripping from field or stock pile. Even in stripping operations they report a 5-yard truck is loaded in 4 minutes, and the high discharge of the 82-A facilitates stock-piling without the use of any additional equipment.



The above diagram shows the 140° swing of the swivel discharge conveyor 522.

Automatic Overload Release Saves Time and Maintenance—All B-G Loaders are equipped with an automatic overload release mounted on the bucket loader head shaft. It automatically trips on overload and automatically resets itself.



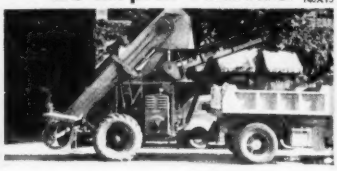
Hollywood, Cal.—To provide safety for participants in the "Sport of Kings" the Hollywood Turf Club and other Coast tracks use an 82-A Loader with special screen attachment to keep the turf free of pebbles which might cause injury to horses.

B-G LOADERS GET THERE FAST—MANEUVER EASILY

The Model 522 B-G Loader combines convenience, capacity and adaptability with a low initial investment and extremely low operating cost. It handles the broadest range of free-flowing bulk materials—as much as 1½ cubic yards per minute—and, as such, is a widely used machine among highway maintenance departments, contractors and municipalities. It is frequently used for leveling, landscaping and other similar operations.

The Swivel Conveyor Model 522 is designed to be low enough to avoid tree branches in street or road work—and to work inside warehouses or other locations where obstructions would ordinarily interfere. On its pneumatic tires, the 522 is towed behind trucks at normal speeds.

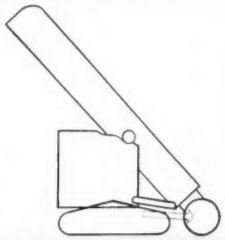
20 m. p. h. TOWING 140X15



B-G FLOATING BOOM ADJUSTS ITSELF TO GRADES AUTOMATICALLY

Assures Accurate Cleanup

The B-G Floating Boom provides for scraper thrusts to be exerted through push-arms direct from the crawlers. The boom is supported on rollers which allow it to automatically adjust itself to irregularities in the grade. This, combined with the follow-up scraper, makes possible a nice cleanup and digging to grade with a high degree of accuracy. Preliminary grades may easily be obtained—in the case of highway operations, for instance.



Floating boom design identifies all Barber-Greene's.

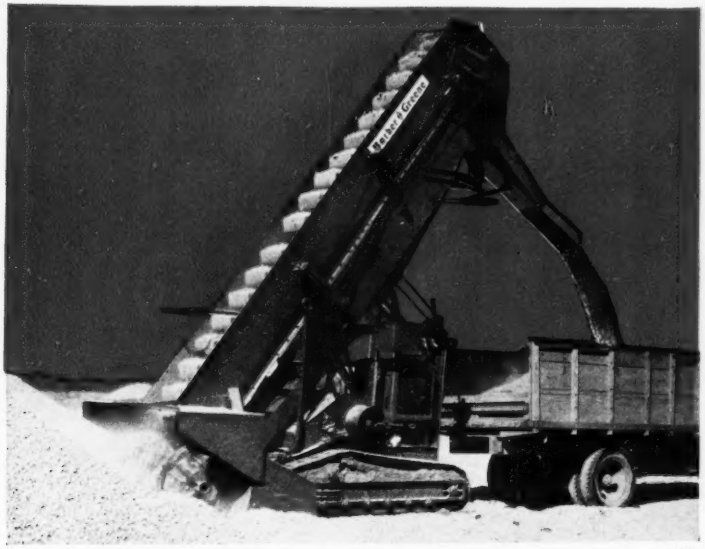
A Feature of All B-G Loaders

The patented Floating Boom is only one of many features in common with all B-G Loaders. Others include the automatic overload release, the B-G Synchronized Spiral Feed, truck type transmissions, simplified controls, etc.

LOADER HELPS DRY FERTILIZER

Morocco, French Africa—A large phosphate mine here uses a B-G 522 in an interesting aerating operation. Traveling down long windrows of phosphate, the 522 elevates the material and, in depositing it in neat, easily reclaimed piles, hastens the drying process.

125,000 TONS LOADED IN TWO YEARS TOTAL REPAIRS LESS THAN $75.00



847452

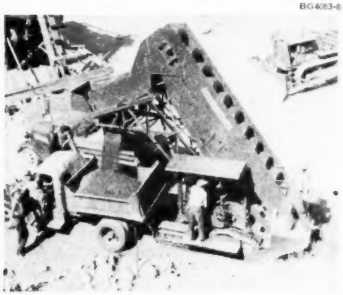
Aggregate Firm Tells Record of B-G Loader

Milwaukee, Wis.—H. F. Reinkel of the Lake Shore Stone Company claims he has the best stock pile loading unit on the market today in his B-G 82-A Loader—and backs his claim with impressive figures:

In the past two years, this Loader has handled 125,000 tons of sand—yet repair costs have been less than $75.00. In an 8-hour day, up to 710 tons are loaded by this crawler-mounted Barber-Greene. Operating the year around, the 82-A successfully breaks through frozen sand, and with its Spiral Feed, pulverizes it to make possible high capacity loading under rigorous conditions.

Mr. Reinkel sums up with the information that with his 82-A, he can exceed the loading capacity of much costlier and less versatile equipment.

BG4083-B



Loaders Pay Off at Bottom of River

Reno, Nev.—Down in the dry river bottoms near here, three B-G Loaders are efficiently at work reclaiming, screening and loading aggregates for the State of Nevada. Equipped with double-deck vibrating screens, the Loaders are able to segregate aggregates into the sizes required—making reclaiming, loading and screening a simple, simultaneous operation. Crawler-mounted, the 82-A's have the stability required for working in locations such as this.

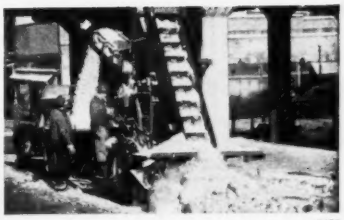
Crawler Mounting Often a Must

The full crawler mounting of the 82-A helps make possible its record performance wherever soft or unsure footing is encountered and or where maximum traction is desirable. This versatile, heavy-duty loader handles up to 3 cubic yards per minute, is available with a wide variety of accessories such as gravity screens, bar screens, vibrating screens, etc. It is widely used as a component of the Barber-Greene Travel Plant where it tows the Mixer and loads it from windrowed material.

ROAD CONTRACTOR AVERAGES 1,000 TONS PER LOADER, PER DAY

Mechanicville, N. Y.—There's a 93,000 ton hole in the ground near here where two 82-A Loaders excavated, screened and loaded bank run gravel for a State road project.

Collins Brothers, Road Contractors, put the Barber-Greene's to work after turning down other types of excavating and loading equipment as too expensive and too slow. The gravel deposit was found in a flat meadow and after scrapers had removed the overburden, the 82-A's took over the job on their own. They each excavated and loaded up to 1,000 tons per day, leaving a 25-foot hole covering many acres—plus a remarkable record for getting a big job done at minimum cost per ton.



44896

Mechanicville, N. Y.—Regular summer service as a Bucket Loader, plus additional value in winter as a Snow Loader, wasn't enough for this 522. Commissioner of Public Works now reports it's used to help keep the 21 miles of city streets free of leaves during the fall.

CITIES CONVERT BUCKET LOADERS TO SNOW LOADERS FOR YEAR-ROUND SERVICE

Removes 6-inch Fall in 18 Hours

Hagerstown, Md.—The first time this city's newly acquired 522 Snow Loader was put to work on snow removal, it removed 6 inches of snow from 3 miles of streets in less than 18 hours. According to J. A. Abbott, Jr., Superintendent of Streets, the 522's performance far exceeded that of other loaders used in the past. It was especially impressive in view of the fact that this was the first time it had ever been used, and also sufficient trucks were not available to keep it operating continuously. Mr. Abbott states, "I personally feel that the 522 Barber-Greene is the answer to the snow removal problem. It is economically priced for use in small towns and several could be used to solve the same problem in larger towns."

Helps Immensely on Snow Removal

Johnston, N. Y.—At negligible cost, this town has converted its 522 Bucket Loader into a Snow Loader capable of handling up to 5 cubic yards of snow a minute. Mr. A. H. McCaffrey, city engineer, affirms that the economies of snow removal are well appreciated by city officials and that the Model 522, with the aid of a few trucks, eliminates congestion and slowup of traffic caused by snow, especially in the business section.

Added incentive to use the 522 to clear streets fast in many cities is maintenance of parking meter revenue—a valuable source of income that suffers when streets are clogged with snow.

Removes 20 Yards of Snow Per Minute

For snow removal on a large scale the 548-A Loader offers the impressive capacity of up to 20 cubic yards per minute. Pneumatic-tired, with 4-wheel drive, it travels at 7 miles per hour road speed. Swivel conveyor allows trucks to travel in the same direction as the Loader. And the 548-A is convertible to a Bucket Loader.

84852

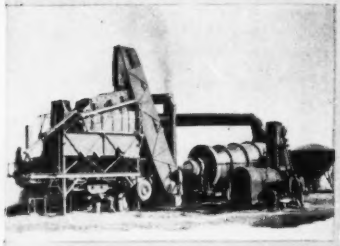
THE B-G LINE CUTS COSTS ALL ALONG THE LINE...

See Barber-Greene for:

B-G PORTABLE CONVEYORS: For moving all bulk materials and packaged goods. Variety of lengths, belt widths and capacities. Electric or gasoline power.

B-G DITCHERS: Crawler and pneumatic tire mounted, for digging trenches from 5½" wide, 4' deep to 24" wide, 8' 3" deep.

B-G PERMANENT CONVEYORS: Complete, standardized equipment including carriers, take-ups, drives, frames, etc.



B-G BITUMINOUS PLANTS: Highly portable plants for producing all types of mixes—up to 120 T.P.H.

B-G FINISHERS: Automatically place smooth level surface regardless of variations in subgrade.

B-G COAL YARD EQUIPMENT: Belt and chain-and-flight Portable Conveyors; self-propelled, pneumatic-tired. Also, hopper-car Unloaders.

To Help You Cut Corners . . .
Barber-Greene Experience is at Your Service

Cutting costs these days is of major importance to everyone whose business involves the handling and rehandling of bulk materials. And it's a subject in which Barber-Greene representatives are well versed and widely schooled—in which their advice may prove invaluable to you. If you're attempting to cut costs by eliminating the use of expensive equipment and manpower, see your Barber-Greene distributor or write directly to Aurora, Illinois. You may be sure your problem will gain quick and helpful consideration.

Barber-Greene Company
Aurora, Illinois
Cable address "Bargreene"

Send information on the Barber-Greene's checked below as indicated:

- ☐ 545-A Loader
- ☐ 522 Loader
- ☐ 82-A Loader
- ☐ 522 Snow Loader
- ☐ 548-A Snow Loader
- ☐ _____
  Other B-G Equipment
- ☐ Have a Representative Call

Name _____

Company _____

Position _____

City _____ Zone _____ State _____

Before You Bid . . .
Before You Buy . . .
Send This Coupon!

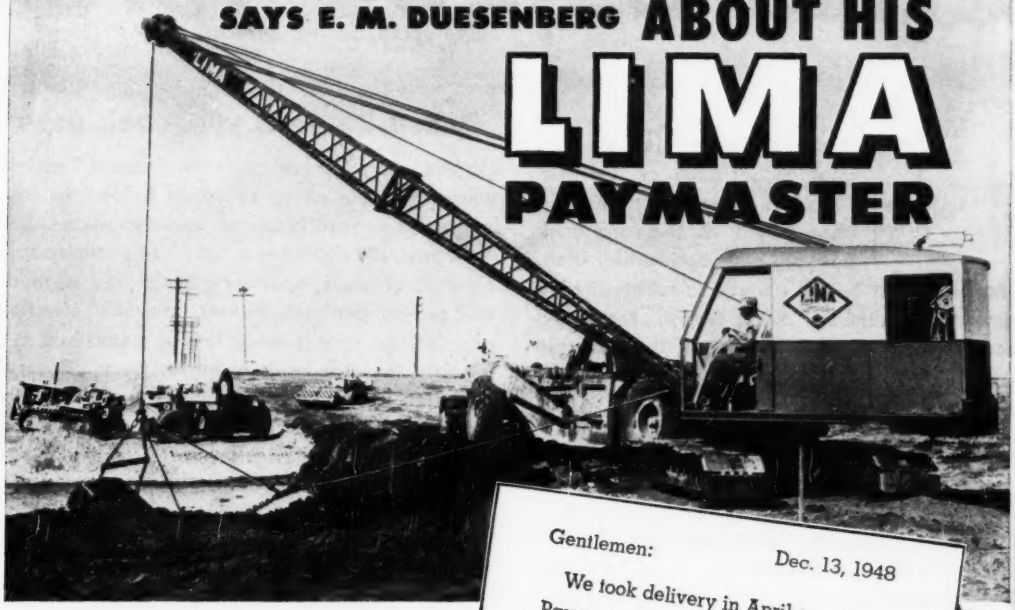
Don't overlook any opportunities these days to widen your margin of profit! In the Barber-Greene line there are many machines—many opportunities—for efficient application to help you bid successfully, to help you operate your business more efficiently.

Fill in and send this coupon to get full, prompt information on the Barber-Greene equipment which interests you. Or see your Barber-Greene distributor.

BARBER-GREENE COMPANY
Aurora, Illinois

"Our upkeep has been negligible"

SAYS E. M. DUESENBERG ABOUT HIS LIMA PAYMASTER



Gentlemen: Dec. 13, 1948

We took delivery in April on a Lima Paymaster "34" Dragline. We have used the machine steady since that time on our various highway projects and think very highly of its performance. Our upkeep has been negligible and the men on the projects think it is one of the best machines on the job. We are glad to recommend this model to anyone and wish to compliment your company on building a fine machine.

Clear Lake, Iowa

E. M. DUESENBERG, INC.
(Signed) E. M. Duesenberg

The LIMA (type 34) Paymaster is a favorite with owners and operators because of its proven ability to *STAY ON THE JOB.* This is the result of expert engineering, superior workmanship and higher quality materials which go into every LIMA unit, and the gruelling performance tests subjected to every machine before shipment.

The LIMA line includes Shovels ¾ to 6 yards, Cranes 13 to 110 tons and Draglines variable.

It will pay you to consult your nearest Lima Sales Office or representative before you buy your next shovel, crane or dragline. Offices in principal U.S. cities.

Lima Shovel and Crane Division

LIMA, OHIO

OTHER DIVISIONS: *Lima Locomotive Works Division; Niles Tool Works Co.; Hooven, Owens, Rentschler Co.*

LIMA HAMILTON CORPORATION

On mountain-top mine, rubber strips 25,000 yards

It takes the agility of a mountain goat to set foot on Garfield Chemical Company's new phosphate mine at Diamond Fork Canyon, near Springville, Utah. Here, located at 8,000' altitude, a rubber-tired C Tournadozer climbed along steep, rock-faced slopes . . . shoved 25,000 yards off the mountain top in thirty-five 8-hour shifts.

8' Overburden Dozed an average of 175'

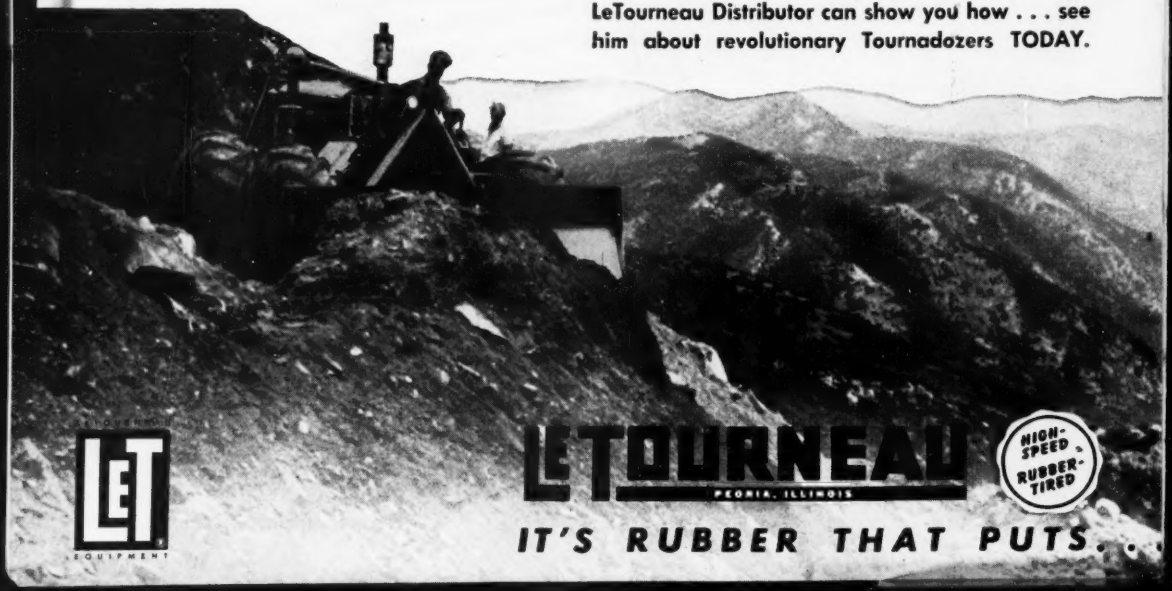
Overburden consisted of an 8-foot layer of heavy clay and imbedded boulders . . . last 18 inches above phosphate was an even tougher, semi-solid material. The entire 25,000 yards had to be moved an average distance of 175 feet. By handling all stripping in 281 work-hours, Tournadozer maintained an overall job average of 89 bank yards an hour. This checks with a time study on a 209-foot one-way shove, which showed the Tournadozer moved 76 bank yards an hour.

Dozed 2½ to 3 yds. each pass

On this work, Tournadozer's 180 "horses" and 4-wheel drive put plenty of power behind the big, rugged, 2½-yard blade to move oversize loads each pass. By dozing in a "slot", to minimize spill off ends of blade, operator often moved as much as 3 cu. yds. per load. Instant, "no-shift" selection of 4 forward speeds saved loss of momentum . . . let operator drift loads in higher gears. Reverse speeds to 15 m.p.h. cut non-productive time on return half of dozing cycle, for more passes per hour. Giant 21.00 x 25, low-pressure tires gave plenty of sure-footed traction on rocky ledges and steep inclines . . . powerful air-actuated brakes on all 4 wheels assured dependable, safe control at all times.

Other mining uses

This fast-working Tournadozer was operated by stripping contractors McFarland and Hullinger of Tooele, Utah, who also used it to sweep up the deposit face . . . and to feed blasted phosphate to loading plant. This same ability to move extra yards per hour . . . and handle extra jobs per year can increase *your* profits, too. Your local LeTourneau Distributor can show you how . . . see him about revolutionary Tournadozers TODAY.



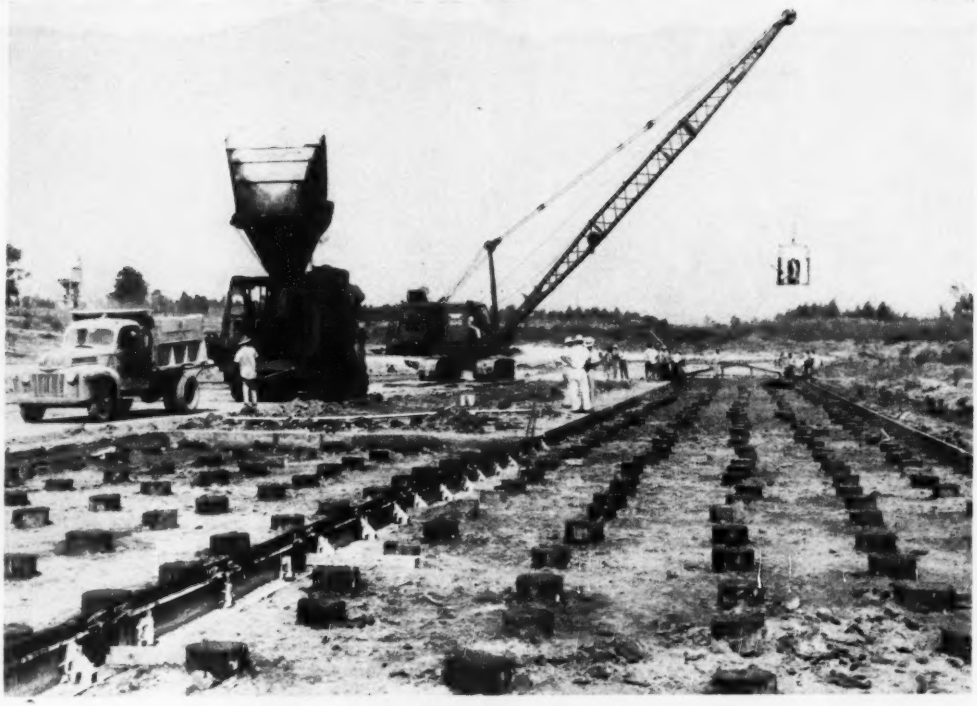
-tired "C" TOURNADOZER

in 35 eight-hour shifts

TOURNADOZERS

. . . THE ACTION IN TRACTION

Tournadozer—Trademark MTP



Dual-drum paver and big crane team up to cap 6,000 timber piles with a . . .

Concrete Sub-Base for Algiers Lock

PILE BUTTS ARE REMOVED with minimum of back-breaking labor by sawing them off at correct elevation with Mall chain saw (at left) and loading them by crane into dump trucks (at right) with old-fashioned one-man stone skip rigged with chain-and-pipe bridle.

STEEL ROAD FORMS are lined up, leveled and braced to pile tops by contractors' engineers, while labor gang gives spongy subgrade final trim ready for paving 22-ft. strip of 12-in. stabilization slab.

RAIN, MUD and MOSQUITOES conspired to harass the contractors on a large paving job in the Louisiana swamplands, but by combatting all three as they came along, the job was completed on schedule. The work resembled a small airport paving job in one respect only. It involved pouring a 12-in. concrete slab 88 ft. wide by 1,130 ft. long.

Termed a "stabilization slab," the pavement serves as a concrete cap for 6,000 timber piling. In reality, it is a sub-base for the 6½-ft. floor of the Algiers Lock now under construction by the Corps of Engineers 7 mi. below New Orleans.

When completed in 1952, Algiers Lock, together with 9 mi. of canal yet to be excavated, will connect the Mississippi River with the Intracoastal Waterway to the west. Lock chamber dimensions are 755x 75-ft., with a 13-ft. minimum depth over the sills.

When the contractors, Stevens Bros. and the Miller-Hutchinson Co. of New Orleans, moved in on the job last August, they found a big hole 1,400 ft. by 500 ft. at the top and sloping down to a 90-ft. width at 20 ft. below Mean Gulf Level. It was full of 12-in. pile butts sticking up 4 to 6 ft. in the air. The hole had been dredged and piles driven under previous contracts.

The job promised to be an easy one—merely to cut the pile butts off 6 in. above the bottom of the slab, and to pour the slab itself. Plans called for the unreinforced concrete slab to be poured in 22-ft. strips, forming a solid, level base on which to place the lock floor. Piles are spaced 4 ft. 2 in. by 4 ft. 6 in.

Mosquitoes in that area were reputed to be both hungry and vicious, and it was believed that the soft blue clay surrounding the piling would become rather mucky when saturated. Both premises proved to be understatements.

The rains came early in September—15 in. fell in two weeks, flooding the work and leaving 4 ft. of water in the hole. A small earth dike was thrown up and an interceptor ditch dug around the entire area to keep out further rain. The hole then was dewatered with one 6-in. Carver electric pump mounted on a pontoon barge, and two 4-in. portable pumps.

A corduroy haul road made of timber planks and 12-in. of clamshell sub-base and surfacing was built along one side of the excavated area for haulage of the pile butts and as a runway for equipment placing the first strip of pavement. Succeeding strips of the 12-in. stabilization pavement were placed by crane and paver, operating on previously poured sections of concrete.

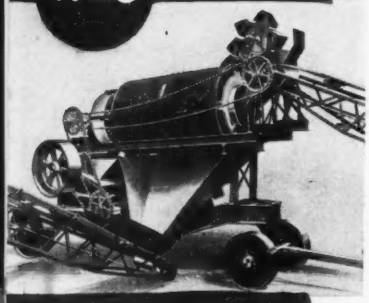
The concrete paver—a twin-batch Koehring 34-E—traveled on the concrete slab. It discharged into a 2-yd. Blaw-Knox bottom-dump bucket which was swung into position over the forms by a Bucyrus-Erie 38-B crane, mounting a 65-ft. boom, with a 55-ft. working radius.

The bucket was too tall to slide

(Continued on page 88)

Year after year Cedarapids gives

1923

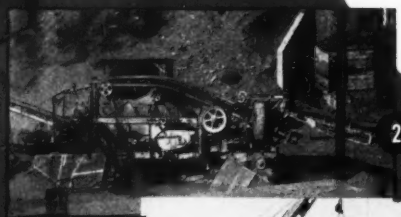


BACK in 1923, the Cedarapids One-Piece-Outfit put high capacity aggregate production *on wheels* for the first time. Year after year since then, Cedarapids portable plants have been improved, increasing production from 20 to 250 tons per hour and even more. The use of big roller bearings, manganese steel, rubber tires, V-belts, universal drives, horizontal vibrating screens and hundreds of other improvements have resulted in aggregate producing plants that are world famous for big volume production with the lowest possible operating and maintenance costs, easy portability and highest quality aggregates. Today, there's a full line of Cedarapids Portable Crushing and Screening Plants, in sizes and types to fit every product requirement and every job.

20 tons per hour with this Cedarapids "first", built in 1923...the One-Piece-Outfit consisting of a bucket elevator, a jaw crusher and a revolving screen, all on wheels. With this first really portable unit, the aggregate plant could be moved wherever necessary to crush and screen whatever was closest to the job, without loss of time or profit-eating costs.

1949 CRUSHING and SCREENING PLANTS

1 Cedarapids Master Tandem producing aggregate for paving a new 4-lane free way through Santa Ana Canyon. With capacities up to *250 tons per hour,* the Master Tandem is the all-purpose gravel plant with the versatility to handle many different contract requirements.



2 This Cedarapids Junior Tandem makes traffic-bound material for a modern stone and sand company, whose postwar renovation program has raised the plant capacity from *500 tons* to *1500 tons per day.*

3 Cedarapids Pitmaster on a Canadian job easily produces 35 *cu. yds. per hour,* with 55% crushing. The Pitmaster Straightline is the smallest complete Iowa portable crushing and screening plant.

4 Capacities of *250 tons per hour, and more,* with Cedarapids Unitized Crushing and Screening Plants, consisting of any combination of the basic primary crushing, scalping, secondary crushing, and wet or dry screening units. Each unit can be used alone or in combination with the others to handle *every* aggregate job.

Buy the Best...

Cedarapids
Built by IOWA

The IOWA LINE of Material Handling Equipment Includes:
ROCK AND GRAVEL CRUSHERS • BELT CONVEYORS • STEEL BINS • BUCKET ELEVATORS • VIBRATOR AND REVOLVING SCREENS • STRAIGHTLINE ROCK AND GRAVEL PLANTS • FEEDERS • TRAPS • PORTABLE POWER CONVEYORS • PORTABLE STONE PLANTS • PORTABLE GRAVEL PLANTS • REDUCTION CRUSHERS • BATCH TYPE ASPHALT PLANTS • HAMMERMILLS • DRAG SCRAPER TANKS • WASHING PLANTS • SOIL COMPACTION UNITS • STEEL BODIES AND TRAILERS • KUBIT IMPACT BREAKERS

you more production more profit less maintenance!

TIME has brought many changes in machines and methods since the first Cedarapids Pre-Mix Asphalt Plant was setting records of 30 tons per hour . . . high production for the first portable plant of the 20's! Now the need for output as high as 100 tons per hour of accurately batched materials has resulted in the modern Cedarapids line of Bituminous Mixing Plants, known throughout the industry for their great capacities, low upkeep and low operation costs. Made up of matched screens, pugmills, batchers, elevators and other component parts, they are built for maximum efficiency, easy portability and economy. They produce a steady flow of thoroughly mixed materials.

30 tons per hour with the first Cedarapids Pre-Mix Asphalt Plant. Continuing research and the development of increasingly better machines have enabled Cedarapids to give you greater production of bituminous mixes at lower operating costs that assure good profits.

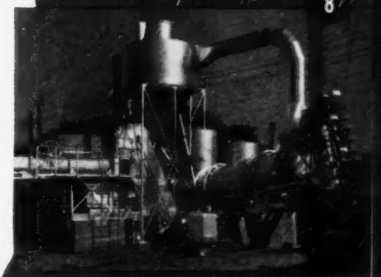
BITUMINOUS MIXING PLANTS 1949

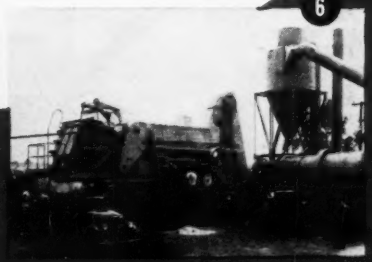
5 Cedarapids Model "E" Batch Type Bituminous Mixing Plant produced an average output of *700 to 800 tons per day* on an airport job that called for mixing 305,700 sq. yds. of flexible base and asphalt surface runways.

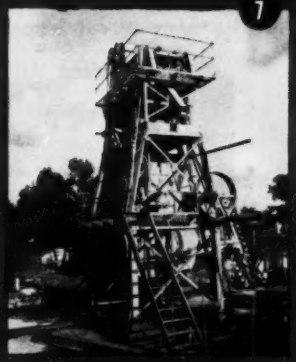
6 Model "FA" is the most portable Batch-Type Bituminous Mixing Plant in the Iowa line. Can be set up ready for operation in a few hours. This plant, operating in Ohio, produces *450 tons* of bituminous materials per day.

7 This Cedarapids 1000 lb. Model "A" Bituminous Mixing Plant produces a steady *200 to 250 tons per day.* Accurate batching, thorough mixing and simplicity of operation keep product quality high and costs low.

8 Cedarapids Patchmaster, a rugged, low-cost continuous-mix Bituminous Mixing Plant, produces *30 tons per hour and more* of uniform, thoroughly coated and mixed aggregate. This Patchmaster can be equipped with a 48" x 16' Cedarapids Drier and Dust Collector.







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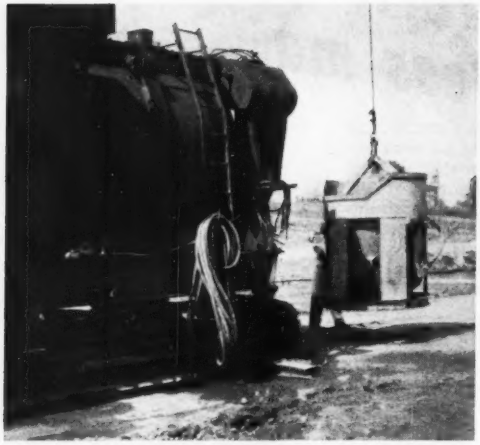
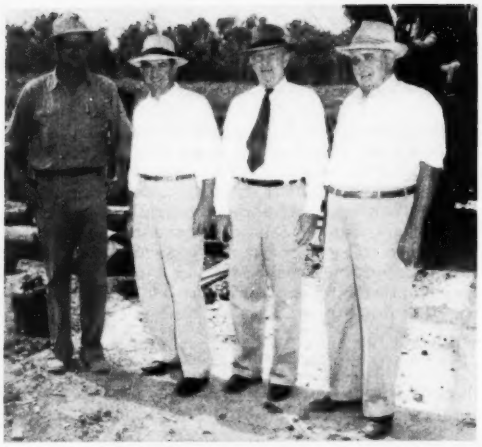
See Your Cedarapids Distributor For Full Details

IOWA MANUFACTURING COMPANY

Cedar Rapids, Iowa, U.S.A.



TWO-YARD BLAW-KNOX concrete bucket was too tall to slide under discharge chute of Koehring paver until contractor cut wide V-notch on one side. This permits paver to operate on previously poured strip of concrete.



HEADING UP big pile-capping job are (l. to r.): T. A. WYNN, assistant construction superintendent for contractors Stevens Bros. and the Miller-Hutchinson Co.; and LT. COL. THOMAS J. BOWEN, officer in charge of the project; HORACE L. DEAR, project engineer; and J. H. DUNHAM, chief inspector, all with the New Orleans District, Corps of Engineers.

CONCRETE BUCKET is spotted by few hand maneuvers, aided by tag line on crane (top), while concrete in stabilization slab receives rough but level finish with trussed timber screed and wooden floats (bottom).

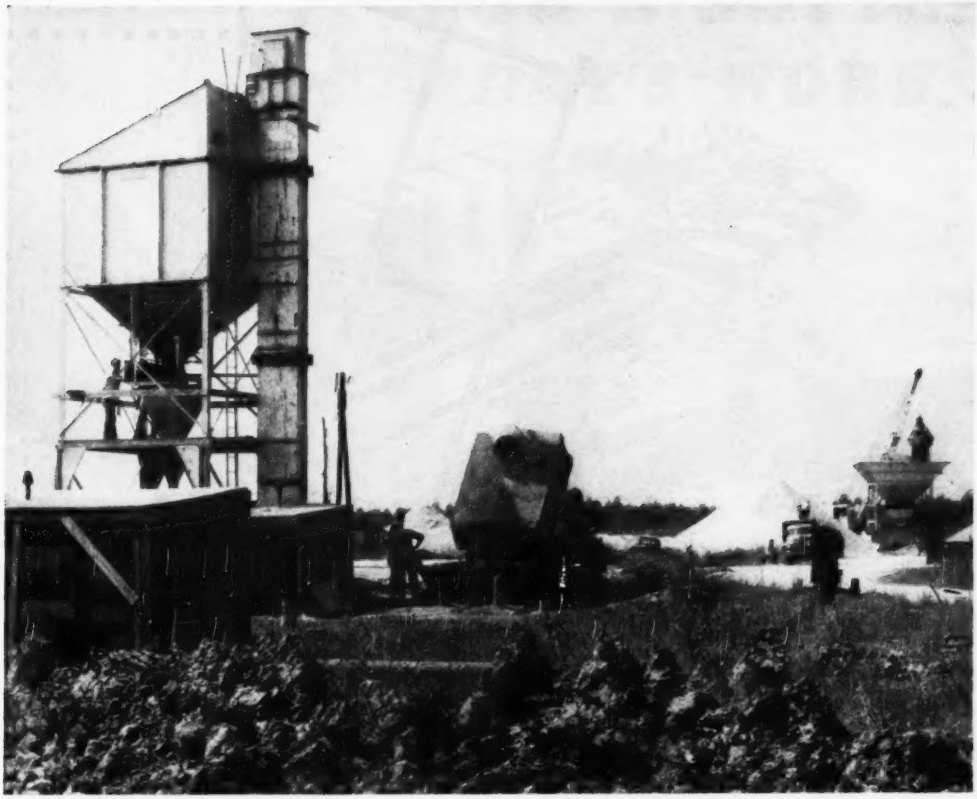
(Continued from page 85)

under the discharge chute without additional planking under the paver. Consequently, a modified V-shaped notch was cut in the side of the bucket, at the top, and plates welded in place to reinforce the edges of the cut metal. The section of metal cut out was saved for re-welding in place to restore the bucket to its original shape after the job was completed.

Pile butts were cut off with a Mall chain saw—a 3-man crew averaging fifty 12-in. butts cut per hr. They were loaded by hand into an old-fashioned one-man stone skip and hoisted by a Bucyrus-Erie 38-B crane into dump trucks for haulage to a disposal area. The skip, with its load of 10 butts was hoisted by the holding line and dumped by the closing line. The holding line was attached to a pipe-and-chain bridle hooked into the sides of the skip, and the closing line was fastened to the rear.

Cement, sand and gravel arrived at a railhead about 5 mi. from the site. A 1,000-bbl. Blaw-Knox bulk storage bin was set up at the railhead, but there was no room for storage of sand and gravel. These aggregates were loaded by a 1-yd. clamshell direct from car into dump trucks for haulage to the job.

Lacking conventional cement trucks, but having plenty of 4-yd. steel-body dump trucks, the contractor converted two of the trucks



CEMENT IS HAULED from railhead in 4-yd. end-dump trucks converted into 25-bbl. watertight cement trucks (center), and charged by screw conveyor and bucket elevator into 300-bbl. Blaw-Knox batching bin (left). Sand and gravel are charged into a 105-ton Blaw-Knox aggregate batching bin (right) with a Koehring 502 crane and 1½-yd. shell.

into watertight cement trucks, by considerable ingenuity and a little welding.

Baffle plates were welded in the rear corners of the truck bodies and a watertight steel plate roof was welded in place. A 24-in. manhole was cut in the roof for loading the trucks with the cement. The endgate was welded shut and a 12x12-in. hole cut in it. A sliding door added over the hole to permit end-dumping of the cement completed the job.

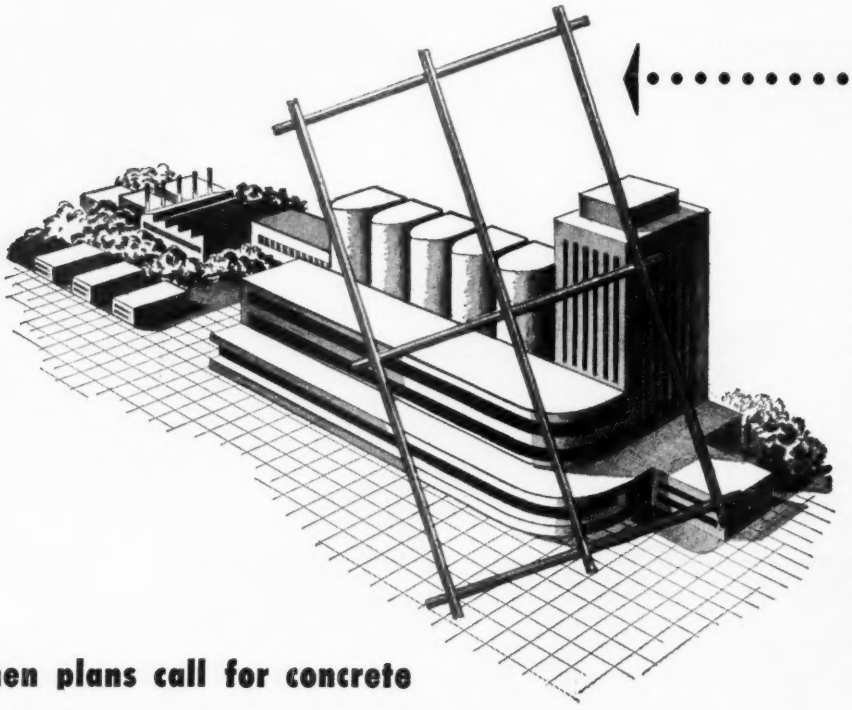
A 300-bbl. Blaw-Knox portable cement batching bin was set up near the job site. It was charged by screw conveyor and bucket elevator. The cement was dumped from the trucks directly into a hopper over the screw conveyor.

Aggregates were stockpiled near the site and charged into a 105-ton Blaw-Knox batching plant with a Koehring 502 crane and a 1½-yd. clamshell. Cement and aggregates then were dry-batched and trucked to the concrete paver. Mixing water was pumped to the job in 2½-in. lines—one along each side of the lock site—and piped to the mixer in a 2-in. flexible hose.

In addition to the stabilization slab, Stevens Bros. and the Miller-Hutchinson Co.'s $1,053,000 contract includes the 6½-ft. reinforced concrete floor of the lock, currently under construction. A. B. Aiken is construction superintendent, assisted by T. A. Wynn; both reporting to R. C. Hutchinson who is supervising the work.

Lt. Col. Thomas J. Bowen is officer in charge of the project for the Corps of Engineers. He is assisted by Horace L. Dear, project engineer; Paul K. Malone, office engineer and J. H. Dunham, chief inspector. Rupert Hodges is engineer field assistant to the district engineer. The entire project is under the jurisdiction of Col. John R. Hardin, district engineer, New Orleans District.

Cash Prizes for Photos Every Month—See Page 96



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American Welded Wire Fabric comes to the job in rolls or flat sheets. Both are easily handled, lie flat and stay in place.

For lighter, stronger concrete construction, specify U·S·S American Welded Wire Fabric. It saves labor cost and construction time.

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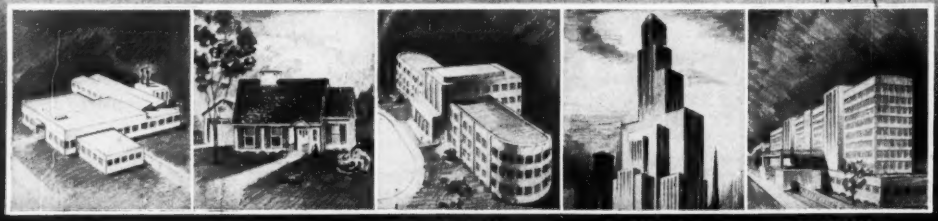
UNITED STATES STEEL

Every type of concrete construction needs American Welded Wire Fabric reinforcement.



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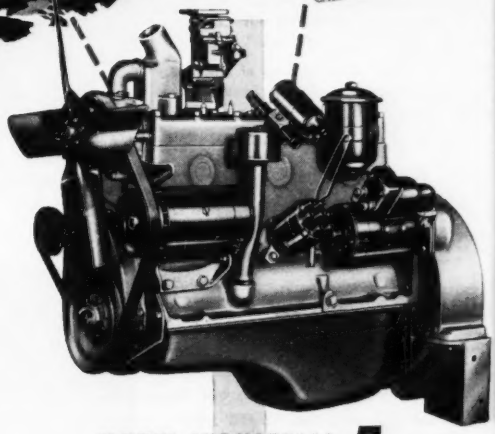

MODEL INDUSTRIAL 5
SIX CYLINDER

Bore 3¼". Stroke 4⅜". 217.7 cubic inches displacement. Engine assembly comes equipped with 6-volt electrical equipment, 4-speed transmission, 19" four-blade suction fan, dustproof distributor and oil bath air cleaner. Generally used in powering tractors and other mobile industrial units for economy and dependability.

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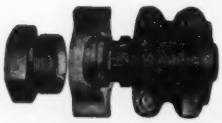


"G J-BOSS" GROUND JOINT, STYLE X-34 FEMALE HOSE COUPLING

For all high or low pressure steam, air and fluids, including oil, hydraulics, butane, etc. Washerless construction provides a leakproof, soft-to-hard metal seal between stem and spud. Malleable iron "Boss" Offset and Interlocking Clamp exerts powerful, full-circumference grip on the hose—proof against blow-offs. Cadmium plated—rustproof. Sizes 1/4" to 6".

Note: For washer type couplings of otherwise identical design specify "Boss" Female Couplings. Style W-16.

"BOSS" MALE COUPLING STYLE MX-16

Companion coupling to both the "G J-Boss" and "Boss" Female Couplings. Corrugated stem has strong hex section for wrench, and collar to engage extensions on clamp segments. Clamp is efficient "Boss" Offset and Interlocking construction. Sizes 1/4" to 6", with each size fitting some size straight end hose.

Stocked by Manufacturers and Jobbers of Mechanical Rubber Goods.

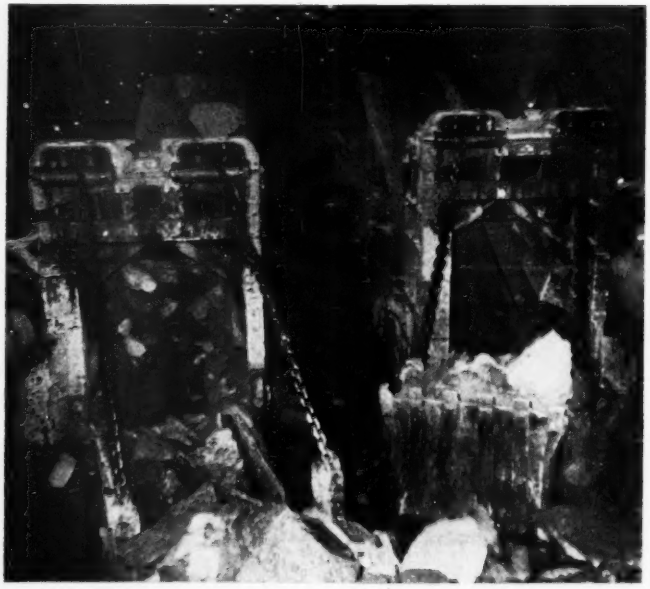
IF IT'S A DIXON PRODUCT

IT'S DEPENDABLE

DIXON
VALVE & COUPLING CO.
Main Office and Factory: PHILADELPHIA, PA.
BRANCHES: CHICAGO BIRMINGHAM LOS ANGELES HOUSTON

Jumbo Doubles as Car Passer on

COMBINATION JUMBO AND CHERRY PICKER on Connolly's Cresta Tunnel Project. Big rig spans double muck tracks, handles cars on both tracks.



FAST MUCKING in the big bore is by two Conway 75's working side by side on double track at the heading.

Western Tunnel

A JUMBO during drilling operations and a car passer during mucking is a double-duty rig built by T. E. Connolly, Inc. for driving the Cresta tunnel in northern California. Running on rails placed outside of two muck car tracks in the 27-ft. horseshoe tunnel, the rig is equipped with winches to hoist empty muck cars from each track and allow full cars to pass below. In this way, this phase of the tunnel operations is speeded up by allowing two Conway muckers at the heading to load separate muck trains.

Car Passing Sequence

Briefly the car passing sequence is this: Trains of five empties come into the tunnel on each set of tracks. A car from each train is placed in position to be loaded. The trains then back up to the gantry rig, and empties are hoisted so they clear the train. By this time the first cars are loaded and these are withdrawn to just beyond the hoisted cars. These empties then are lowered to the rails and shoved to the mucker for loading. The process is repeated until the last car in each train is in loading position, at which time the trains leave the tunnel to pick up additional empties.

During drilling operations, the rig is pushed to the heading and the 15 drills mounted on the head end of it go into action. Some 120 drill holes are used for each round. By use of this equipment, a complete cycle of operations is usually made during each 8-hr. shift. About 4½ hr. are required for drilling, 1½ hr. for loading the holes, and 2 hr. for mucking operations.

The combination jumbo and car passer has a steel frame made of channel and I-beams. Working decks for the drillers are timber.

To Provide More Power

The 4-mi. Cresta tunnel is a part of the Pacific Gas and Electric Co.'s Feather River development. It will connect Cresta Dam with Cresta powerhouse, both now under construction. This $62,000,000 project, including Rock Creek Dam, tunnel and powerhouse farther upstream, will provide 201,000 additional kw. generating capacity. Earl Walsh is general superintendent for Connolly on the tunnel work.

30 seconds does it... for JOE RAMSETTER

No drilling or plugging for JOE RAMSETTER. In 30 seconds, he does the complete job of setting pins or studs to accurate positions in steel, concrete, masonry. Just load the light, portable RAMSET TOOL, press against the work and RAM! Fastener sets quicker than a wink—tightly, easily.

No electric lines or air compressors! RAMSET is self-powered, carried in one hand from job to job, always ready to set, instantly, pins and threaded studs up to 6″ long and ⅝″ diameter. On continuous work, any good workman can "RAMSET" up to 50 fasteners per hour.

Ask for a 15-minute RAMSET demonstration. You'll see why it breaks all records for speed and economy on fastening jobs, pays a profit on every setting.

Ramset FASTENING SYSTEM

Stemco Corporation, Cleveland 16 (Rocky River), Ohio.

In Canada—Globe Machine Tools, Batawa, Ontario.

Stemco Corporation, CM 5
Cleveland 16 (Rocky River), Ohio
Please send details and arrange 15-minute demonstration of RAMSET FASTENING SYSTEM. No obligation, of course.

Name _____

Company _____

Address _____

Here's the answer

to high-speed, low-cost spreading of dry, harsh concrete

THE BLAW-KNOX CONCRETE PAVING SPREADER *—with the Automatic Transverse Blade*

EXCLUSIVE FEATURES

Automatic spreading regardless of where concrete is placed on the subgrade.

Action of transverse spreading blade clears path for forward movement of spreader machine.

Will not disturb joints or reinforcing.

Paving vibrator driven by same engine and transmission that operate spreaders.

Paving vibrator does not rest on side forms.

One-man operation for spreading and vibrating.

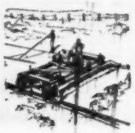
NO matter where the concrete is dumped on the subgrade, the forward motion of the Blaw-Knox Concrete Paving Spreader and the transverse motion of the spreader blade spreads it uniformly to the width and elevation required. There's no segregating effect on the concrete regardless of its dryness or the size of the aggregates. The automatic reversing action of the spreader blade relieves lateral pressure so alignment of paving forms is never disturbed. The Blaw-Knox Spreader has plenty of capacity to keep up with two 34-E DuoMix Pavers.

A Blaw-Knox Vibratory attachment may be added to compact concrete simultaneously with the spreading operation to increase the density and strength of the concrete.

Blaw-Knox Spreaders are available in two standard adjustable widths—10′ to 15′ and 20′ to 25′. Narrow machines can be converted to wide machines and vice versa. For the whole story on low-cost paving, ask your nearest Blaw-Knox distributor about his complete line of concrete paving equipment.

AGGREGATE PLANTS

FINISHING MACHINES

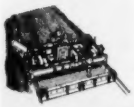


BULK CEMENT PLANTS

CLAMSHELL BUCKETS

ROAD FORMS

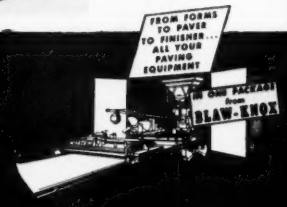
SUBGRADERS



ALSO

Concrete Pavers
Adnun Black Top Pavers
Kinetic Mixers
Concrete Buckets
Steel Street Forms
Truck Mixers
Ready Mixed Concrete Plants, Etc.

BLAW-KNOX

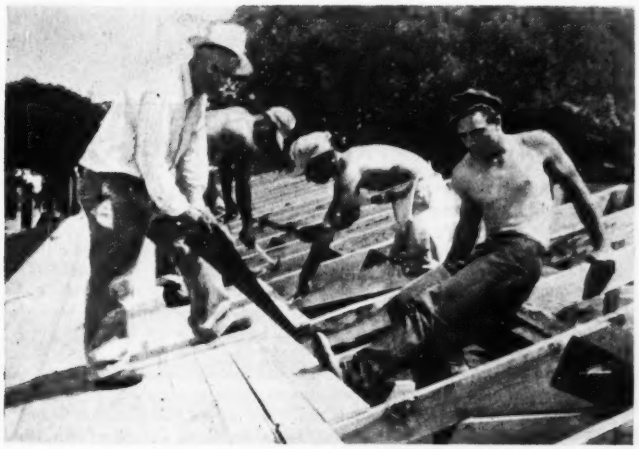


BLAW-KNOX DIVISION OF BLAW-KNOX CO., Farmers Bank Bldg., Pittsburgh 22, Pa.

New York • Chicago • Philadelphia • Birmingham • Washington

WALLS are laid up by mason apprentices under watchful eye of Instructor.

Apprentices Build School for Own Instruction



CARPENTER CLASS INSTRUCTOR A. A. RABKE (saw in hand) shows his students how to finish up roof.

PRODUCTION WHILE LEARNING has been demonstrated in a big way in San Antonio where apprentices are building a school building for their own classroom instruction. The project has been carried out by apprentices in the various building trades—bricklaying, carpentry, plastering, cement finishing, plumbing, electrical, roofing, painting.

Apprentices on the job have been supervised by foremen and instructors participating in the city-wide apprenticeship programs in the trades. The work has been carried out mainly on Saturdays when other construction jobs in which apprentices and journeymen were engaged, were not in progress.

The building is a one-story brick and tile structure with cement flooring, plaster walls and ceiling, and contains several good-sized

THEY LEARN by working on a real structure. School building in San Antonio, Tex., is built by building trades apprentices to be used later for classroom instruction.

PLUMBER APPRENTICES start school building by roughing in plumbing work.

ELECTRICAL WORK was done by this group of apprentices under direction of B. LOVE (standing second from left), member of IBEW Local 60, and a similar second class of students.

classrooms. Before the building was entirely completed, classes for apprentices employed in the city-wide apprenticeship programs were being held in it. It has been erected in answer to a long felt need for larger facilities for supplementary classroom instruction for the increased number of apprentices in training in the city.

The construction job has been a community undertaking in which joint contractor-labor committees in charge of the apprenticeship programs in each of the building trades, local contractors, labor unions, building materials dealers, architects and the San Antonio Board of Education have cooperated. Other cooperating organizations have been the San Antonio Employers Council and the San Antonio Building and Construction Trades Council.

The undertaking was initiated by W. H. McChesney, apprentice training coordinator connected with the local school board, and representatives of the San Antonio office of the Department of Labor's Bureau of Apprenticeship. W. C. Worcester of the San Antonio chapter of the Associated General Contractors shouldered the responsibility for over-all supervision of the work.

The project, in its entirety, was an outstanding demonstration of community cooperation—the getting together of employers, labor, the local school system, building supply companies and government to carry out a project in which they had a mutual interest. At the same time, it afforded an opportunity for apprentices to work from plans from foundation to roof on a live job, designed for their own benefit —an incentive to demonstrate their ability and skill through production while learning.

CASH PRIZES FOR CONSTRUCTION PHOTOS

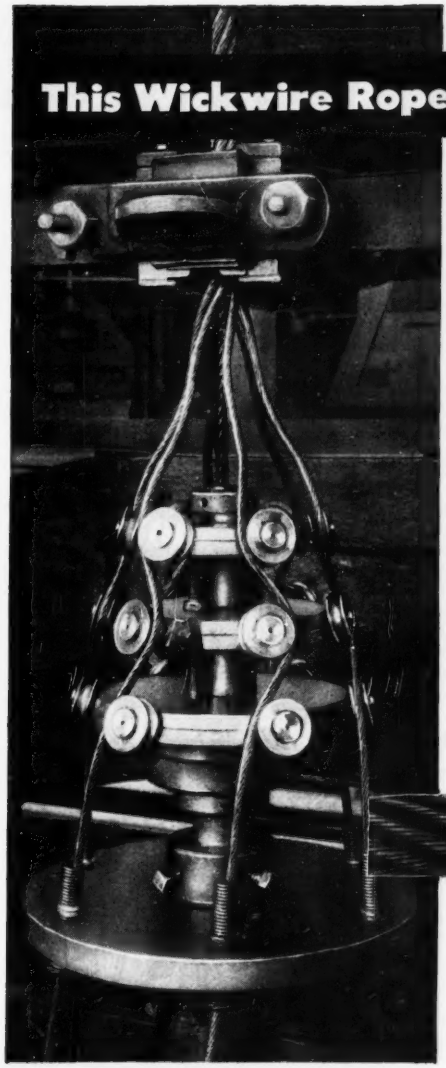
CASH IN on your pictures of interesting and outstanding construction operations by entering the continuing monthly *Construction Methods* photo contest. Full details and rules were announced in the March issue, but they are simple.

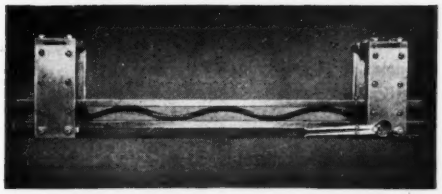
Just send in good pictures in glossy prints 3¼x4¼ in. (or larger (or accompanied by negatives) of spectacular construction scenes, new construction ideas, new or unusual applications of equipment and tools, good or bad safety measures —in fact, anything of interest pertaining to actual construction operations.

Each month three cash prizes of $25, $15 and $10 will be paid for photographs judged best by the editors. Other pictures published will be paid for at standard rates of $5 each.

Grease up the old camera and send those good shots to: Picture Contest Editor, *Construction Methods*, 330 W. 42 St., New York 18, N. Y.

This Wickwire Rope Gets a Permanent Wave





Passing strands of Wickwire Rope through a special roller head causes them to set in a wave-like pattern. The result is WISSCOLAY *Pre*formed—a rope that not only lasts longer than non-preformed rope, but is kink-resistant; easier to cut, splice and install, and safer to handle.

Before any order of WISSCOLAY *Pre*formed is run off, samples are subjected to several tests—most important of which is the Strand Helix Test. Individual strands are placed between the plates of the testing apparatus and checked with a micrometer. These tests are made by inspectors whose approval demands that the helix diameter be controlled within the closest of tolerances in meeting the specified standard.

This and countless other tough tests, coupled with over 125 years of wire-working know-how, make Wickwire Rope the logical choice of rope users who demand the utmost in performance, safety and long life.

Wickwire Distributors and Wire Rope Engineers in key cities everywhere are ready to help solve your wire rope problems and to provide prompt delivery of the rope you need. Wickwire Rope is available in all sizes and constructions—both regular lay and WISSCOLAY *Pre*formed.

THIS 82-PAGE BOOK ON WIRE ROPE IS FREE. WRITE FOR YOUR COPY TODAY!

Thousands of wire rope users have found that the information packed in the pages of "Know Your Ropes" has made their work easier. It's full of suggestions on proper selection, application and usage of wire rope. It's easy-to-read and profusely illustrated. For your free copy, write—Wire Rope Sales Office, Wickwire Spencer Steel, Palmer, Massachusetts.

WICKWIRE ROPE

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A PRODUCT OF THE WICKWIRE SPENCER STEEL DIVISION OF THE COLORADO FUEL AND IRON CORPORATION

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LEGAL ADVENTURES OF TRACTOR CONN

By LESLIE JOBB

The Case of the Empty Hotel

Tractor Conn had agreed to build a hotel for a Massachusetts hotel company and to take stock in the company for 50 percent of the contract price. Then the company passed a resolution providing that the "subscribers be allowed interest on all stock held by them up to the time when the proposed hotel shall be completed and put into operation." Later, when the hotel was completed but not running, Tractor Conn demanded his interest and quoted the resolution.

"No, the motion doesn't mean that at all," the company argued, "for it doesn't mention annual interest nor name any time for payment. The only date that is mentioned is the completion and operation of the hotel, so you have to wait till then for your interest."

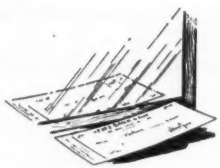
"What if the hotel is never operated?" Conn questioned.

"Then you'll never draw the interest."

And the Massachusetts Supreme Court ruled that the company was right.

"Taking the legal obligation of the company to pay interest, on the ground which Conn places it, interest was not payable annually, or at any other period, because the vote did not so provide," said the Court.

The Case of the Double Check



On September 2 John Doe gave Richard Roe a check in payment of an account.

On September 3 Roe telephoned Doe that he had lost the check, and Doe promptly stopped payment.

On September 4 Doe sent Roe another check for the same amount, and Roe promptly cashed the check at the bank on which it was drawn.

On September 14 Roe endorsed the first check to Tractor Conn, who took it in good faith, for value, and then attempted to collect from Doe.

"The date of the check has been changed from September 2 to 12," Doe pointed out.

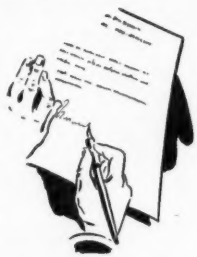
"The law allows a holder in due course of an altered check to collect 'according to its original tenor,'" Conn countered.

"If that's true, then the check wasn't presented for payment for more than ten days after its date, which is an unreasonable delay."

"The delay has no bearing on your loss," Tractor Conn retorted, and the New York Courts ruled in his favor.

"The loss suffered by Doe must be attributed not to delay in the presentment of the check, but to his imprudent reliance on the false and fraudulent representations of Roe. Before giving the new check, Doe might have insisted upon full indemnity from Roe, and thus have escaped the loss of which he now complains," said the Court.

The Case of the Minnesota Injunction



"In case Tractor Conn shall fail or delay to provide the necessary labor and materials so as to complete said apartment house by July 1, in the judgment of Smith and Jones, the said architects, the said owner may cancel this contract by notifying Tractor Conn to that effect," a Minnesota contract provided. The architects certified that Conn had not provided the necessary labor and materials to complete the contract on time. The owner so notified Conn who kept on working. The owner took out an injunction, and Smith was giving evidence.

"You signed this certificate that is in court?" Conn's lawyer asked.

"I did," Smith answered.

"Did you examine the work before signing it?"

"I did not," Smith admitted.

"Have you ever seen this building at any time?"

"I have not."

"Then on what did you base your certificate?"

"On information I received from Jones, who had examined it."

"The two architects named can only grant a certificate on a personal examination, not on hearsay information," said the Minnesota Supreme Court in ruling for Tractor Conn.

More Legal Adventures Next Month

are you being taken for a buggy ride?

Is the high cost of materials and labor clouding your profit picture . . . endangering your customer relations?

To cost-conscious contractors and engineers, Rex Pumpcrete . . . *the pump that pumps concrete through a pipe line* . . . provides a proved way to substantially reduce costs!

For example! Think of the costs involved in buggying concrete! Figure the savings to be gained when you can eliminate the buggy run and deliver concrete through a pipe line right to the point of replacement.

Then! Figure how much you could cut your bids if you could be assured the fastest, most advantageous form and steel setting sequence . . . if you could achieve a closer coordination between the trades (carpenters, steel setters, concrete crews) and reduce interference with these interlocking activities.

Because Pumpcrete makes these advantages possible through steady pumping instead of the usual occasional pour, you can cut days off your schedule . . . and that means money in your pocket!

Add to these cost-cutting advantages, the fact that Pumpcrete transports concrete through a pipe line on one or more levels . . . elevates or lowers and distributes concrete in ONE operation. Thus, you can eliminate the expense of road building and maintenance . . . trestling and scaffolding . . . towers and many other items of preparatory work that add materially to construction costs.

If you want to avoid being taken for a "buggy ride," talk to your Rex Distributor before you bid. He can show you how you can cut costs . . . improve concrete quality . . . make more money with "concrete by pipe line." If you prefer, write direct for free copies of informative Bulletins on Pumpcrete economy. Address Chain Belt Company, 1664 West Bruce Street, Milwaukee 4, Wis.

REMEMBER, Pumpcrete can now be rented from your Rex Distributor so you can prove the economy of pipe line placement for yourself at low cost!

CONSTRUCTION MACHINERY

It's A Water Hog

Yes sir! It handles anything from seepage to 15,000 gallons per hour. And it won't clog while pumping solids. Self-priming, of course, and *fast.* Has automatic seepage control, guaranteed 28 ft. suction lift, plenty of discharge pressure, and a built-in gasoline-engine that has the *guts* to keep going without fussing or babying under the toughest working conditions.

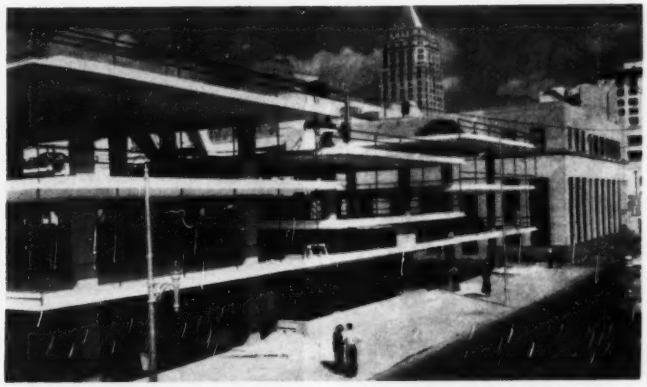
But Never A Truck Hog

No sir! A Homelite Gasoline-Engine-Driven Pump is the last word in compactness. Fits in a corner of a truck or trunk of car. Requires no crew of men to unload it . . . no special planking to roll it on location. One man picks it up and carries it right to the spot you want it. Write, right now, for our new descriptive bulletin.

SPEED YOUR CONSTRUCTION WORK WITH Homelite Carryable Pumps

HOMELITE CORPORATION, 1005 RIVERDALE AVE., PORT CHESTER, N. Y.
Manufacturers of Homelite Carryable Pumps • Generators • Blowers • Chain Saws

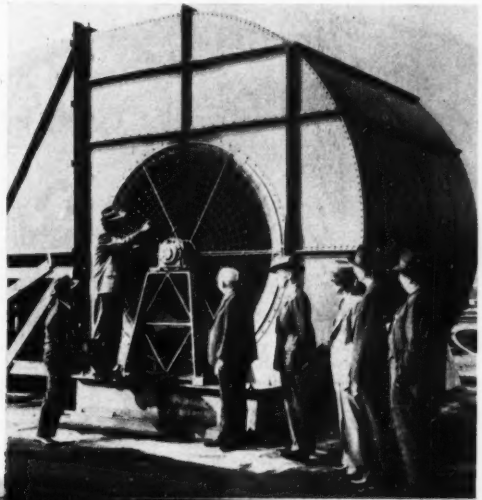
COAXIAL CABLE FOR TELEVISION and telephone service of Pacific Telephone & Telegraph Co. between Seattle and Yakima, Wash., is laid in 5-ft. deep underground slot formed by heavy plow hauled by Allis-Chalmers tractors.



BUILDING WITHOUT WALLS is 3-deck concrete parking garage completed in downtown Miami, Fla. It has a capacity of 360 automobiles.—Wide World Photo

CONTRACTORS BREAK GROUND on Port of New York Authority's $20,000,000 bus terminal in midtown Manhattan, New York City. The politicians held their ceremonies, too, but here are the men who will do the work: Marion Shovel operator JOSEPH ROSENBERG; oiler JIM VALARDI (standing on crawler); M. F. BREEN, president, M. F. Breen Co., subcontractor on excavation; HOWARD COLLINS, president, Howard Collins Construction Co., general contractors; F. CAREY, Port Authority engineer; WILLIAM WEINSTEIN, vice-president; FRED TRESSLET, engineer, and S. MILLER, blasting superintendent, all of Howard Collins Construction Co.—Mal Gurian Photo

LUNG FOR BROOKLYN-BATTERY TUNNEL, New York City, is viewed by officials of Triborough Bridge and Tunnel Authority. This is first of 53 Westinghouse blowers, 15 ft. high, that will ventilate subaqueous vehicular route.—Acme Photo



FOR
EASIER
FASTER
Drilling

THE
McCARTHY
VERTICAL
DRILL

● For record-breaking performance... for ease of operation, you can't top a McCarthy Vertical Drill. Recently, on one difficult job, workers using McCarthy equipment drilled an 8-inch hole 100 feet deep in only 40 minutes! The derrick is raised and lowered by hydraulic power . . . finger tip controlled . . . and a 60 H. P. gasoline motor is part of the standard equipment.

The McCarthy Vertical Drill, manufactured by The Salem Tool Co., is adaptable to high wall and key way drilling and diamond drill boring . . . drills 90% of all limestone and sand rock formations, and readily burrows through shale. Send today for complete information, and for a free copy of The Salem Tool Company booklet.

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SINCE 1901

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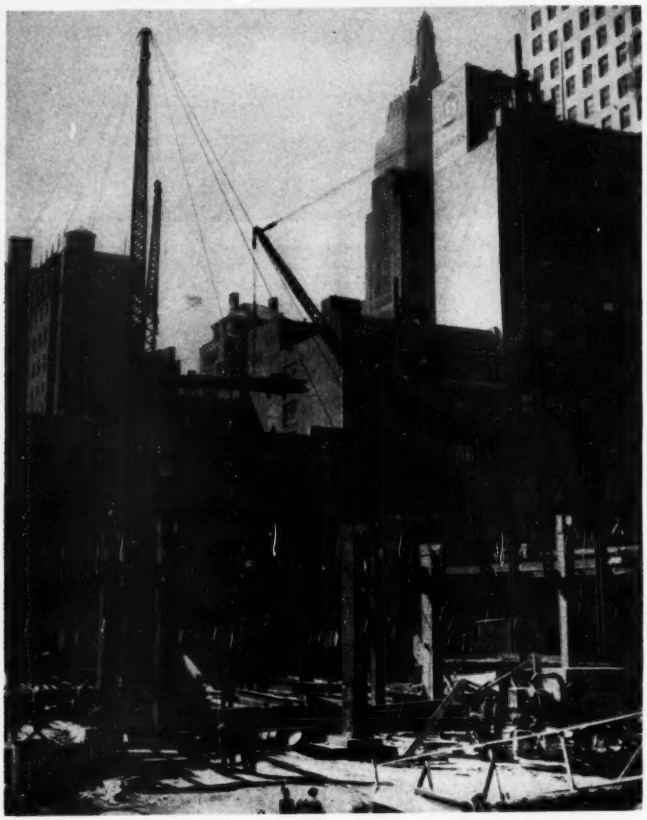
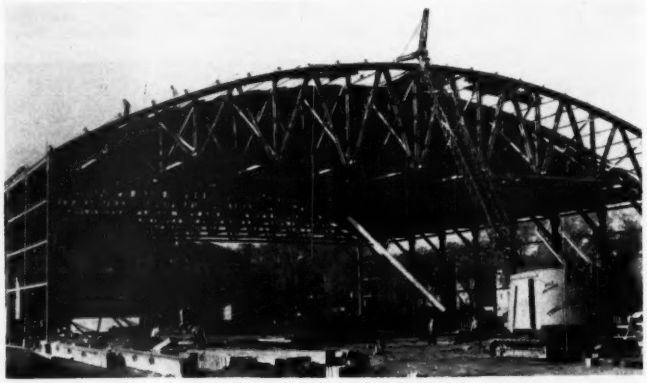
THIS MONTH'S NEWS REEL... Continued



TO REPLACE OLD NEW YORK LANDMARK George A. Fuller Co., contractor, starts erection of steel for 36-story office building, 100 Park Ave., to replace famous old Murray Hill Hotel, between 40th and 41st Sts. Structure is first skyscraper to be erected in New York's Grand Central area since early 1930's. Kahn & Jacobs are architects.



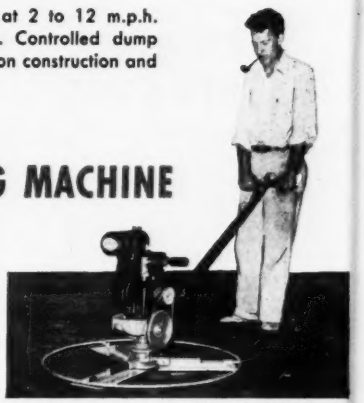
PREFABRICATED TIMBER TRUSSES for 200x400-ft. winter sports building at University of Minnesota are erected by two 20-ton cranes with 75-ft. booms and 20-ft. jibs. All lumber in 16 trusses was treated with Wolman wood preservative salts to prevent decay. Fabrication and erection were done by Timber Structures, Inc., of Portland, Ore.

ONE MAN does it...

with a Whiteman POWER BUGGY

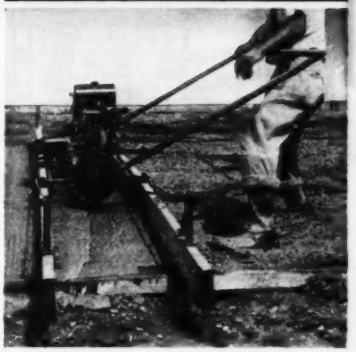
ONE MAN can haul 5 wheelbarrowsful per load...at 2 to 12 m.p.h. Fits under most mixer chutes without blocks (34" high). Controlled dump makes it easy to pour wet concrete. Quickly pays for itself on construction and maintenance jobs.

with a Whiteman FLOATING-FINISHING MACHINE



ONE MAN, with this mechanical trowel can float or finish as much in a day as 5 men would do by back-breaking manual methods. With new "snap-on" float trowels for compacting the slab...drives out air pockets ...brings up moisture. Trowel pitch adjustable while in operation. Electric or gasoline powered. Available in 2 sizes.

with a Whiteman RODDING MACHINE



ONE MAN can rod slabs to a perfect level...at the same time puddle and vibrate entire depth and area for thorough compactness...ready for floating and finishing. Gasoline engine, 1½ H.P.

Whiteman MANUFACTURING CO.
3249 Casitas Avenue
Los Angeles 26, Calif.

Send for literature and prices

WHITEMAN MFG. CO., 3249 Casitas Avenue, Los Angeles 26, California
Please send me literature and prices on the Whiteman Power Buggy and other Whiteman Concrete Equipment.

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MASTER CARPENTRY MATHEMATICS
. . . and save time, effort and money

This manual helps you

- **Figure dimensions, materials, etc. more quickly**
- **Make more accurate estimates for bids**
- **Keep accurate business records**

THIS BOOK explains in simple terms the math every contractor and carpenter needs to know. The basic arithmetic of decimals, fractions, percentages and mensuration is applied throughout to everyday carpentry problems like calculating dimensions of a structure, ordering lumber and hardware, computing costs of labor and materials, and keeping accurate records.

Just Published! New, Second Edition

CARPENTRY MATHEMATICS

By J. Douglas Wilson and Clell M. Rogers
249 pages • 5½ x 8 • 116 illus. • $3.00

AFTER explaining basic fundamentals, this manual provides you with 595 self-quiz questions that apply the essentials of carpentry math to construction problems ranging from laying out, spacing and framing to estimating requirements for plaster, cement, nails and lumber.

APPLIES MATH TO JOB PROBLEMS

It gives you a thorough review of basic arithmetic and of mathematics as you put it to actual use on the job. Answers to all questions are included so you can check your own accuracy.

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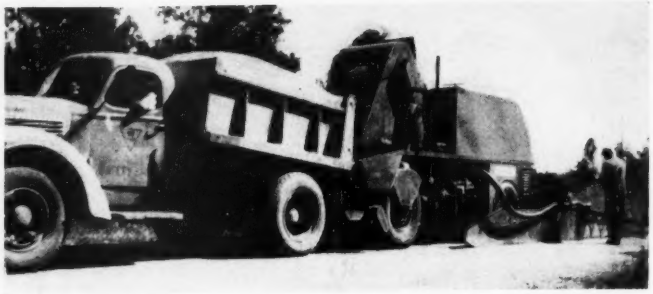

In one side . . .

Hetherington-Berner Moto-Paver digests truck load of limestone aggregate without even slowing down on Tennessee highway job. Inside paver aggregate is mixed with emulsified asphalt giving 4½ percent asphaltic content by weight to mix.

Out the other . . .

Paver makes 9-ft. pass. Finishing course varies from 1 in. at crown to 4 in. on the edge. Compaction by tandem roller and a light application of screening dust finishes job.

Emulsified Asphalt Paving With Road Mixer

SIMPLICITY of operation and low cost per mile were achieved in applying emulsified asphalt by the road-mix method in Tennessee. The State Highway Department recently cashed in on a combination of Hetherington-Berner Moto-Paver and Bitucote emulsified asphalt in surfacing 26 mi. of State Route 64.

On this particular job the old roadbed was left undisturbed to take advantage of the stability resulting from years of heavy traffic compaction. The road had a good base and excellent drainage but was rough, out of shape, and in places had a high crown. A leveling course corrected this condition and removed waviness. The finishing course varied from 1 in. in the center to 4 in. on the edge. The road was covered in two 9-ft. passes

at a rate of 1 mi. per day. Mixing and laying was continuous followed from 45 min. to 1 hr. later by rolling and compaction. A light application of screening was dusted over the surface before the road was opened to prevent traffic pickup. Top production for the job was 750 tons laid per day, requiring a little more than a tank car of emulsified asphalt. A clean, sharp limestone aggregate with very little dust was stockpiled midway on the job and hauled to the job site where the Moto-Paver was supplied without interruption.

The Bedford County project was headed by S. M. Squires, Division Engineer and J. B. Ramsey, Division Maintenance Engineer. E. S. Ezell, District Maintenance Engineer supervised the daily operation. The entire project was completed without re-routing traffic at any time. Emulsified asphalt type SS-1 was furnished by the El Dorado, Ark., Bitucote Products plant.

Spike Sez: Leggo that pile and grab yourself a Mae West vest. Drowned construction stiffs are an infernal nuisance, and I want none of 'em on my jobs. Everybody working over water has gotta wear a life belt or out he goes!

WANT TO SEE YOUR NAME AND PICTURE IN PRINT?

See Announcement on Page 96

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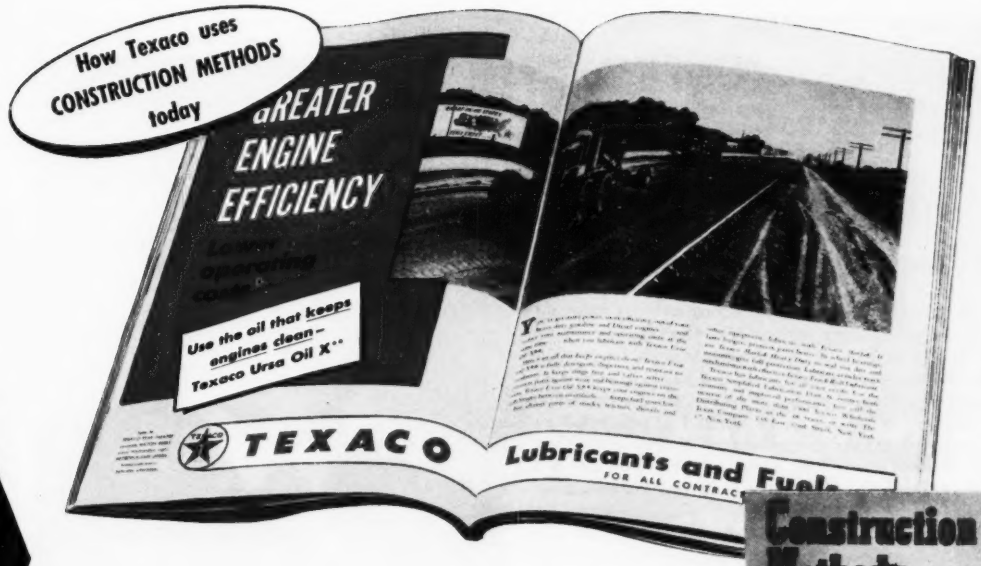
advertises in Construction Methods... *and has for 23 years*

23 years ago in CONSTRUCTION METHODS


How Texaco uses CONSTRUCTION METHODS today
GREATER ENGINE EFFICIENCY
Use the oil that keeps engines clean — Texaco Ursa Oil X**
TEXACO
Lubricants and Fuels

why?

. . . because CONSTRUCTION METHODS' readers — project engineers and contractors "on location" — use the lubricants and fuels The Texas Company *makes*.

THE TEXAS COMPANY knows the needs of the country's construction machinery for lubricants — for lubricants that don't break down under rugged working conditions.

The Texas Company knows that the men responsible for getting the most out of equipment are the men who use it . . . and who buy the lubricants that keep it fit.

The Texas Company knows that thousands of these buyers read CONSTRUCTION METHODS . . . thousands who are frequently hard for salesmen to reach every time they're buying lubricants and fuels.

That's why, since 1926, The Texas Company has advertised in CONSTRUCTION METHODS . . . to reach the field men of the construction industry . . . to explain the advantages of Texaco Products . . . and thus help Texaco salesmen facing the men who decide "which brand."

Month after month CONSTRUCTION METHODS helps construction men . . . working on all kinds of construction jobs the country over . . . solve equipment operating and maintenance problems . . . does it with step-by-step pictures and text. That's one big reason why they read it. And that's why CONSTRUCTION METHODS offers the manufacturer of products construction men buy an effective selling opportunity.

Here are 7 more manufacturers of lubricants who advertise in CONSTRUCTION METHODS to reach the men "on location" who buy the brands they use.

Alemite Div., Stewart-Warner Corp.
Fiske Bros. Refining Co.
Gulf Refining Co.
Lion Oil Co.
Sinclair Refining Co.
Standard Oil Co. of California
Standard Oil Co. of Indiana

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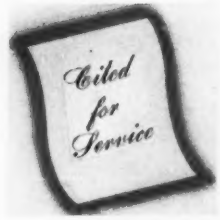
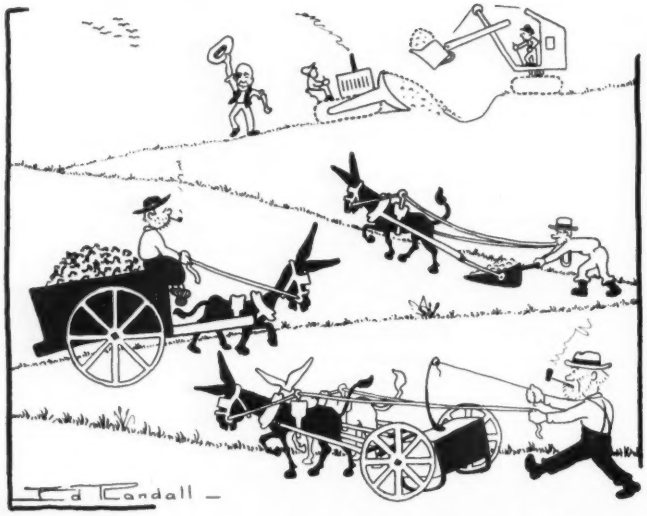


WE DEPART from our usual one-page feature "Cited for Service" this month because of peculiar circumstances. Long an admirer of that grand old man of Texas contracting—J. L. Allhands—we asked him for his life sketch from which we could compile our customary monthly tribute to an outstanding construction man. He replied with the following story, characteristically stating: "Use whatever you want." The story is too good to abstract or condense, for Mr. Allhands unconsciously outlined a thrilling history of early contracting in pioneer territory. Therefore, we are presenting his life story in full, just as he dictated it, augmented by early-day photographs supplied from his yet unpublished book "An Album of Tools." As a partner of Allhands and Briley, of Dallas, he is still active in construction throughout the Southwest. As we rush through modern mechanized, high-speed and highly efficient construction operations, it is well to stop a moment and reflect upon the pioneers who blazed the way to today's construction procedure. Mr. Allhands lifts the veil momentarily on the glorious, but rugged past. We pay tribute to his accomplishments.—RICH

J. L. ALLHANDS

Contracting in the Old Days



Spike Sez: Hats off to the old-timers who blazed pioneer construction trails with mule-powered slips, wheelers and dump carts. We, who take modern equipment for granted, don't see how you did it. Mr. Allhands, as one of those successful early-day contractors who did wonders with what you had, we salute you!

I WAS BORN on a farm near Sheldon, Ill., Sept. 23, 1879. A fall from a hay loft at the age of 5 seriously injured my left hip. A mistaken diagnosis by a small-town doctor caused me to become bedridden for two years, followed by a surgical operation and a long convalescence routine. That greatly limited my opportunities for schooling. My widowed mother moved her brood of three to Wichita, Kan., the year following the opening of Oklahoma to white settlement, and at 16 I had finished the 5th grade. Money was scarce at home and times were bad, too bad for a college degree or even a high school course, so I polished off my grade school education by scraping my way through a course in stenography at a local business college. At the same time I enrolled in a night school for the study of dots and dashes, in order that I might become a Morse telegrapher.

Upon completion of those courses I found getting started slow and painful. No one seemed to want an inexperienced youth with no dis-

cernable business sense, and especially one hobbling about on a pair of crutches. One day I again took my courage in tow and called on the Roadmaster and Master Mechanic of a 107-mi. jerkwater railroad, the Kansas Midland. When I was informed that neither office had a typewriter, that they were handling all their correspondence by longhand, and had no appropriation for hiring a stenographer, I conceived the idea of getting a start with them as an unpaid apprentice. At first they balked, but I finally wangled them into letting me come into that office for practice. I brought along a banged-up Densmore typewriter, for which I paid $2 per month rental.

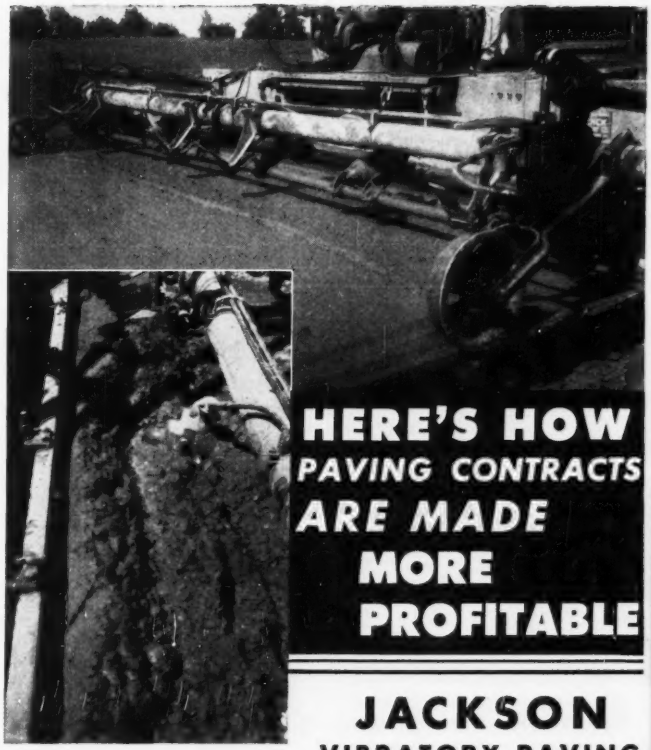
First Pay Envelope

I made myself so useful that within 30 days I was placed on the payroll. When I received the first pay envelope I experienced one of the most gratifying moments of my life—it contained $10. A telegraph wire was cut into that office, and I became familiar with the motive power department and the operation of a railroad section. After 18 months with the Midland, master mechanic C. A. DeHaven went to the north end of the Port Arthur Route in Missouri, and took me along at a salary of $40 per month. Before two years rolled around, my benefactor, Mr. DeHaven, was out of a job by a shakeup in the management. He next sent for me to report at the Shreveport, La., shops. However, there was some panic and fear in that city over a flareup in yellow fever, and I decided to go into St. Louis instead. There I learned that a contruction outfit in the Indian Territory was urgently in need of a stenographer, and that the pay was $50 per month, and free transportation.

It seems that several Indian Territory pioneers hungering for transportation had been dreaming of a railroad to open the country west of the M.K. & T. line. On Aug. 13, 1895, they had organized the St. Louis, Oklahoma & Southern Railway Co. and sought a charter from Congress.

Many years ago this territory was absorbed into the State of Oklahoma, but back in the 1890's it was an unsettled, extraordinary country and the home of five civilized tribes —the Cherokee, Choctaw, Chickasaw, Creek and Seminole. Among the promoters of this railroad were Pleasant Porter, governor of the

(Continued on page 112)



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quickly make plastic the stiff, drier concrete mixes which effect up to 10% cement economies. Concrete at forms and joints is puddled perfectly, thus saving hand vibrating. Spreading costs are reduced and finisher progress is much more rapid. Complete compaction and excellent finish is obtained. Perfectly adaptable to slabs 6" to 24" thick and for regular single or two-course construction. Easily adjustable in the field (with proper accessories) from 10 ft. to 25 ft. slab-widths. Quickly attached to any standard finisher. Ample reserve power to offset fast drying and setting conditions. Effortless controls for finisher operator.

A constantly increasing number of highway engineers are specifying full slab-width internal vibration. Get the complete facts in time to be in line and profit in '49. Write, NOW!

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Jackson Municipal Paving Unit (Manually guided electric vibratory screed and power plant); Jackson Side Form Vibrators for attachment to standard finishers or spreaders to eliminate manual vibrating; vibrators for every type of construction.

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Standardize and

STANDARDIZED EQUIPMENT

Two "matched teams" of "Caterpillar" DW10 Tractors and W10 Wagons working on well-timed schedule with a "Caterpillar" Diesel-powered shovel on the Cincinnati Freeway project.

"MONEY saved is money made" is an old saying that makes a lot of sense. Shrewd contractors make it one of their most valuable guides to profit. The DeSalvo Construction Co., of Cincinnati, is one of them.

Says A. DeSalvo, Vice-President: "We learned the hard way—through experience with jumbled equipment that was often expensive. But today WE'RE NOT GUESSING when considering our requirements for important earthmoving projects. We've found that all-'Caterpillar' equipment — made entirely by one high-caliber manufacturer and serviced by one thoroughly equipped dealer — offers the surest means for saving and making money.

"It eliminates confusion. It simplifies maintenance — gets us efficient service quickly when we need it. It makes operators more familiar with their machines, and consequently more expert. It definitely contributes to the continuous operation that is so essential to high production and low costs.

"On the Freeway job our fleet of 'Caterpillar' machines gave us very high availability time per hour. They plainly showed that they are specially designed to work together; and their performance in every way justifies our continued confidence in 'Caterpillar.'"

"Standardize and economize" — real buy words for "Caterpillar" Diesel equipment!

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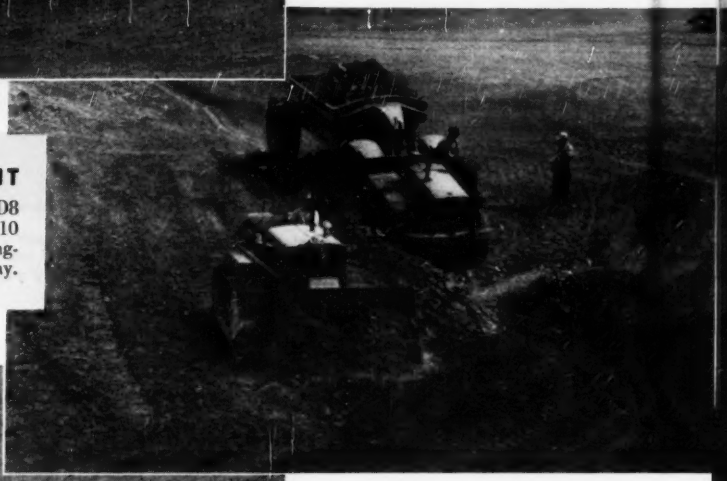
Economize

STANDARDIZED SERVICE—Headquarters of the "Caterpillar" dealer whose modern facilities and factory-trained mechanics enabled the DeSalvo Company's "Caterpillar" equipment to keep its job on the Cincinnati Freeway project moving.

STANDARDIZED EQUIPMENT

A "matched team": A "Caterpillar" D8 Tractor and No. 80 Scraper making medium-haul cuts and fills on the Cincinnati Freeway.



STANDARDIZED EQUIPMENT

Two "matched teams": A "Caterpillar" D8 Tractor and No. 8S Bulldozer and a DW10 and W10 Wagon collaborating on hauling-and-spreading on the Cincinnati Freeway.

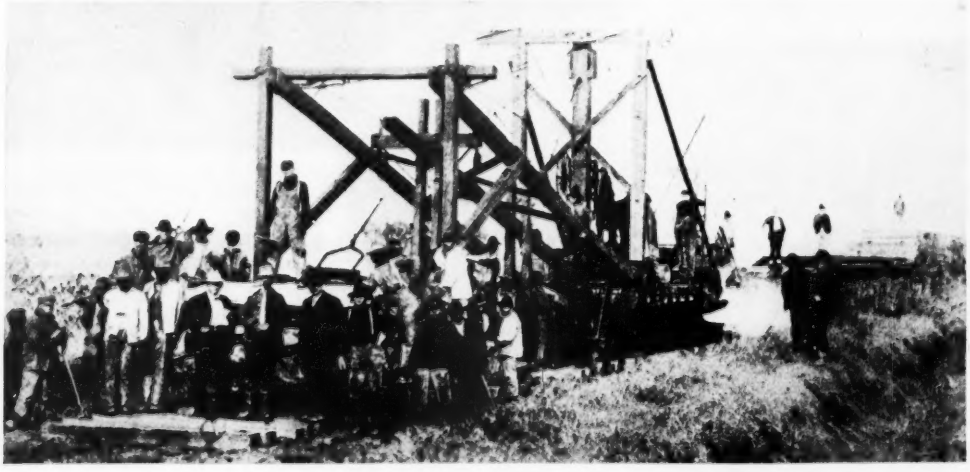
STANDARDIZED EQUIPMENT

A "Caterpillar" No. 12 Motor Grader maintaining road for "Caterpillar" earthmoving equipment . . . another example of "matched team" work on the Cincinnati Freeway project.

CONTRACTING IN THE OLD DAYS...Continued

WHEELED SCRAPERS grading Findlay-Pana (Illinois) cutoff on Chicago & Eastern Illinois R.R., 1903. Remarkable yardages were placed by these outfits, particularly from side borrow pits.

BIGGEST DIRT MOVER of bygone days was horse- and mule-powered elevating grader. This old Western Wheeled Scraper Co. grader, loading into dump wagons made by same company, sometimes required as many as 20 animals to push and pull rig. Belt elevator was powered through gears and chains by big bull wheel in foreground. Note crew of five—two drivers, three operators—on machine. Four horses pushing grader are early-day version of a modern push cat.



PIONEER tracklaying machine, on McCabe & Stein section of St. Louis, Brownsville & Mexico R.R. (now Mo. Pac.), first railroad to reach the lower Rio Grande Valley in 1903.

(Continued from page 109)

Creek Nation, and John F. Brown, governor of the Seminole Nation. The first preliminary line for this road was run southward from Claremore in 1895, after which the promoters waged a 4-year fight to get the line built.

In 1889, the firm of Johnston Bros. & Faught, of St. Elmo, Ill., became interested in the proposition at the instance of B. F. Yoakum. That firm, destined to step up among the mighty in the construction industry, had started in the earthmoving game by grading a portion of the Vandalia R.R., using oxen and slip scrapers. That partnership had built, on a shoe string, a railroad extending from Altamont to Thebes, Ill. This they operated for about three years as the Chicago, Paducah & Memphis, and eventually sold out to the Chicago & Eastern Illinois Co.

In February, 1900, Johnston Bros. & Faught had started actual construction of the St. Louis, Oklahoma & Southern project south from Sapulpa. That contract, like much of their work, called for a turnkey job and they were paid by the mile of completed line. Often such contracts, in addition to actual construction work, provided stated sums for engineering and rolling stock or equipment.

New Worlds to Conquer

The spring month of April is often referred to as the month of beginnings and bornings, and it was on the morning of April 5, 1900, after almost 40 hr. riding in a day coach filled with laborers, that I stepped off a train at Sapulpa, Indian Territory. My future fate was settled that day, though I did not realize it at the time. Thenceforth, my life's work was to be centered in a field rich in fascinating lore and history, a field in which I would find new worlds to conquer, since no two jobs are exactly alike, and a field that is packed with excitement, uncertainty and all the thrills of gambling.

Sapulpa, named for a Creek Indian, Jim Sapulpa, had become the dead end of the Frisco rails in 1886. Twelve years later those railheads had been extended into Oklahoma City, but it was still a desolate frontier village in April, 1900. Its muddy, unpaved streets bore hoof marks of roving cattle, hogs and ponies. There were no sidewalks or street lights. Most of its

(Continued on page 114)

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A Complete Line of DRAGLINES, POWER SHOVELS, CRANES, BACKHOES, PILE DRIVERS
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Diesel, Gas, Electric, ⅜ to 2½ Cu. Yd.

There are a number of important, time-saving and money-making features built into every Osgood unit — complete *Air Control* of basic motions; an *Air Cushion Clutch* that provides top speed almost instantly, without lag, without grab or jerk; adjustable *Hook Rollers*, operating on the underside of the rotating gear to keep the upper body stabilized on the crawler truck frame . . . fewer wearing parts, greater accessibility of machinery, larger diameter power-operated frictions, and many similar advancements.

Look to Osgood for cranes, shovels, draglines, backhoes, and pile drivers that will give you more work every day, better performance, easier operation, longer life, larger profits!

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DIESEL, GASOLINE OR ELECTRIC POWERED • ⅜ TO 2½ CU. YD. • CRAWLERS & MOBILCRANES

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The Stang System has proved its efficiency and economy on both large and small jobs all over the United States. Stang engineering and supervision in planning, installation and operation insures a DRY JOB at all times.

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(Continued from page 113)

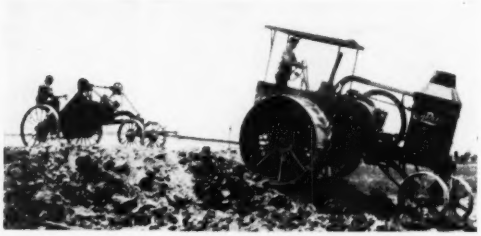
buildings were one-story affairs of frame and sheet iron. Indian squaws in blankets, braids and moccasins were parked under the wooden awnings in front of the stores. In his guardianship over his Indian wards, Uncle Sam tried dreadfully hard to keep the territory dry, and hot cider, lemon extract and Jamaica Ginger (jake) were familiar substitutes for liquid stimulants. There was a public well at Dewey and Main Streets, where just about everybody got water.

Johnston Bros. & Faught had a stark bare little frame office, a shack of rough unpainted boards, and their private car "Wanderer," where they slept and ate, stood nearby on a spur. In a corner of that crude office there was a high counting-house desk where bookkeeper E. C. Porterfield, atop a stool, toiled on an old-style Boston ledger. A battered desk in the middle of the room was used by members of the firm. In a partitioned room a plain home-made table, fastened to the wall, served as a stenographer's and telegrapher's desk. A bench held a tub filled with water. To its side there was attached an ordinary clothes wringer for handling copy cloths used in

HAND-LOADED DUMP CARS build an early railroad fill by end-dumping methods. Note supervisor on horseback.

HAND MUCKERS load dump carts on rock cut for Santa Fe R.R. in Arizona. Rock too big to load into carts was hauled away by indispensable stone boat in foreground.

ORIGIN of the bulldozer—called "man's miracle tool in war and peace" by Allhands—is lost in obscurity. Crude horse-powered predecessors of modern bulldozer, home-built in job blacksmith shops, were used by old-time firms such as Foley Bros., the Kilpatricks, and Johnston Bros. & Faught. Western Wheeled Scraper Co. listed this factory-built model for first time in its 1915 catalog.



FIRST TRACTOR-DRAWN SCRAPER UNIT is believed to be this Baker-Maney Wheeler pulled by a Rumley Oil Pull tractor on Insull estate at Libertyville, Ill., 1912.

taking impressions of all letters, telegrams, etc.

I found board and room in the private home of Ira Dodds, at $3 per week, my bed being a pallet on the floor shared with son Daniel. In those days Oklahoma and the territory were noted for many storms — tornadoes that whirled through darkened skies, and almost every home had a cave or storm cellar. Often in the dead of night an approaching storm would send the families hot-footing for the "fraid holes," as the storm cellars were called.

I didn't have any idea that the job would be such a tough one. The firm had been unable to hold a stenographer prior to my coming, but St. Louis was a long way off, and I was awfully low in funds, so I had to stick it out. The tracklaying and bridge-building sub-contractors were unable to keep a stenographer, and I was soon writing letters for them at night, and for which they paid me 25c. per hr.

Grading camps turning the good earth into a railroad grade were strung out along the route of this new line like a bivouacked army. Often women shared with their men the burdens and hardships of such camps, with children trailing their parents from job to job like Gypsies, and getting a lick-and-promise schooling.

Early-Day Labor Costs

That railroad grade was being thrown up with only the simplest of earthmoving tools. The sub was being paid from a dime to 12c. per yd. for moving earth. He got from 30 to 35c. for loose rock, and solid rock brought around 65c. Such prices appear awfully low on today's market, but there was no insurance or bond premiums to pay, and labor from $1.25 to $1.50 per day was ridiculously low, and the hours were unreasonably long, ranging from 12 to 14 per day. Another contributing factor was the fact that this grading was handled on a borrow and waste basis—in and out with a slip or wheeler—getting rid of the material in the shortest distance possible. Those earthmovers knew nothing about building a fill in lifts or layers. Wetting and rolling the fills and a sandpaper finish was something they had never heard of. That new grade was taken up, accepted, by the engineer when its finish was reasonably smooth, such as could be had by dragging a split log over

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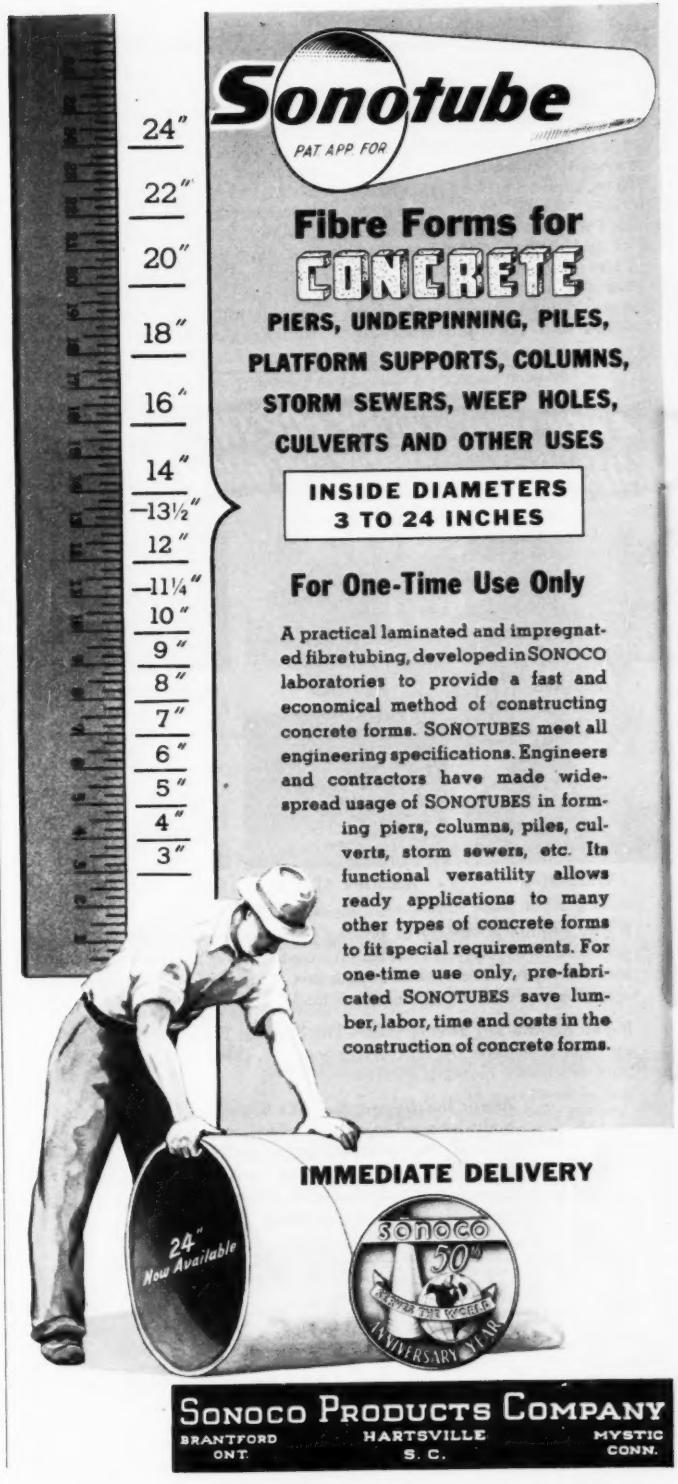


(Continued from page 115)

it. A mule's heehaw was sweet music to the contractor of that day because mule power was in its prime. Those four-footed tractors were driven by tanned, brawny men, a rather special tribe who had a way with mules.

Those graders broke across rocky barriers after they had been blasted with black powder. Sledges, picks and shovels came into play, and two-wheeled carts or wheeled scrapers rolled out of those cuts. Men worked until their hands were blistered and calloused worrying boulders up on an old-fashioned stoneboat (a camp-made sled). The handling of a wheeler was no work for a weakling; it required strength and skill and knowledge of mule power. And when you think of the old wheeled scraper in the passing parade of tools, you'll remember a bunch of progressive Iowa contractors, who in the late 70's started building their own wheelers. They not only provided tools for completion of their hurry-up job, but they opened a new world in earthmoving tools, and laid the foundation for that old reliable Western Wheeled Scraper Co. It was the line of tools made by this Western Co. that stood first in the esteem of the dirtmovers on this Sapulpa road. Incidentally, that business is still carrying on as the Austin-Western Co., of Aurora, Ill., creating new and better earthmoving equipment to meet ever-changing conditions.

No one seemed to have his nose to the ground seeking oil in that section. I recall how on occasional Sunday afternoons we would walk along the shaded banks of Pole Cat Creek. There we would skip stones over the surface of the water so they would come to a splash in an oily slime. We had no idea then that this scum was really "creek oil," and that in only a few years men of great vision would trace that seepage to a staggering fortune in "black gold."

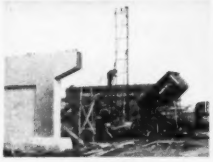
Fortune Ignored

Another incident comes to my mind, and but for a fantastic trick of fate, the construction force on this St. Louis, Oklahoma & Southern road would have been the discoverers of a lush oil field. It all happened in this manner. In the spring of 1900, J. F. Hinckley, chief engineer, and his office manager, W. B. Drake, were jogging along the trail in their buckboard. They were returning to headquarters at Sapulpa from the High Henry Ranch—a ranch that later became the site of a new town, Henryetta, Indian Territory, said to have been named after Henry and his wife, Etta. When these men reached a point that in later years became the town of Kiefer, they observed a white man (nester) afar off cutting prairie hay with a mowing machine. He would stop occasionally, and they began asking themselves what he was doing with the large can. They drove up, stopped and found he was lubricating his mower. He took them over near the foot of the slope of one of the small knobs or hills and pointed out where he had started to dig a water well for his cattle. He told them of how a strange-smelling liquid seeped into the hole at a depth of around eight feet. It spoiled his water well and he did not seem to place any particular importance on the find other than it worked pretty good on his machine. It had the appearance and odor of petroleum. Both Hinckley and Drake were mighty impressed. They felt maybe that the country was guilty of harboring an oil field, so they obtained a sample of the stuff and sent it

A NEW UTILITY BODY FOR THE NATION'S BIG HIGHWAY PROGRAM

The Low-Cost Dumpcrete

PAVING



BRIDGES

CURB AND GUTTER

WIDENING

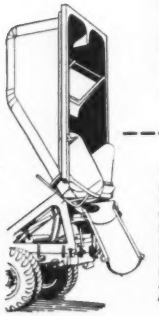
MEDIAN STRIPS

SAND, GRAVEL, EARTH

If you handle a variety of paving jobs—Here's a proved way to get more yardage at less cost. Set up a central mixer (a paver or portable mixer) for *close control* of your mix. Then haul in the fast, low-cost Dumpcrete and place *uniform* loads.

If you handle big paving jobs—The low-cost Dumpcrete can pick up from your paver for off-the-slab pours . . . culverts, bridges, turnouts, sidewalks, curb-and-gutters.

About the Dumpcrete—It's a non-agitating concrete body designed especially to haul air-entrained concrete (a must for extra durability and workability). The Dumpcrete costs less to buy, to run and to maintain. It loads fast and places fast. Learn how it can cut your costs. Mail the coupon today. There's no obligation.



The lower cost Dumpcrete is lightweight, watertight, with 13-foot chute, controlled higher discharge and lower center of gravity. Hauls sand, gravel, and coal too. Available in 2, 3, and 4 yard sizes.

Send me facts about the cost-cutting Dumpcrete for paving work.

Name_____

Firm_____

Address_____

DUMPCRETE

DIVISION, MAXON CONSTRUCTION CO., INC.

540 Talbott Bldg., Dayton 2, Ohio

off to a chemist for analysis. Eagerly they waited word from the chemist, and it was quite a jolt when they read his report, "liquid asphaltum, with no commercial value."

Capt. Hinckley continued the building of railroads, and Bill Drake later became general manger of the Port Terminal R.R. in Houston, Tex. Both of them lived to see others follow after them in this Indian country and reap golden harvests, for it was indeed a "new Canaan" of oil riches. Thirteen months after taking this sample from the nester's well, Doctors J. C. Bland and Fred S. Clinton brought in the first producer in that section. It was located at the north edge of Red Fork, and gushed as high as the top of the derrick.

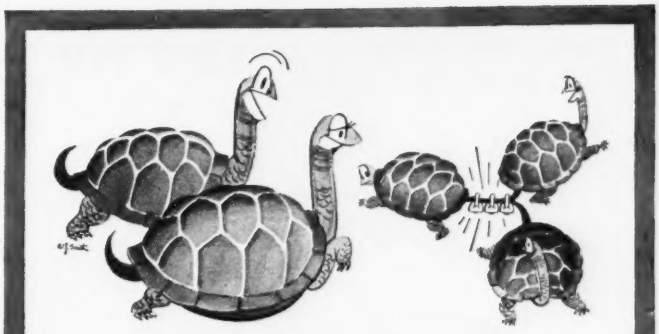
On November 25, 1905, a test financed by Tulsa men on the Ida E. Glenn allotment ushered in the dizzy field known as "Glenn Pool." That was back in a day when oil was selling at 40c. Sapulpa and Kiefer became the center of oil and gas fields, the largest of which was Glenn Pool. The field extended to within 4 mi. of Sapulpa. The town of Beggs, named after vice-president and general manger C. H. Beggs of the Frisco Railroad, gave its name to still another lush oil field.

Tulsa Booms

Sapulpa, with a population of 891, including our construction force, had to bow to its rival across the river, Tulsey Town, with its population of 1,390. However, Sapulpa had something to crow over, too. It was a railroad division point with a round house and small shop facilities. Sapulpa also boasted about having the best places in the territory to eat. The Fred Harvey eating houses were operating along the Frisco R.R. in that day. Here at Sapulpa in a red-painted frame building beside the depot, they served train passengers with meals. All customers were required to wear coats in the dining room, and for 75c. you not only got the best flavored cup of coffee, but the food was so abundant you couldn't begin to eat it all, and so good you couldn't bear to leave it.

Just how did Tulsa become the oil capital of the world when the great Glenn Pool was 12 mi. south of town, and but one-third that distance from Sapulpa? It was as lively a bit of trade larceny as any city could put across when Tulsa

(Continued on page 118)



They used to keep turning turtle, until we hitched them up with Crosby Clips!

Industry buys more

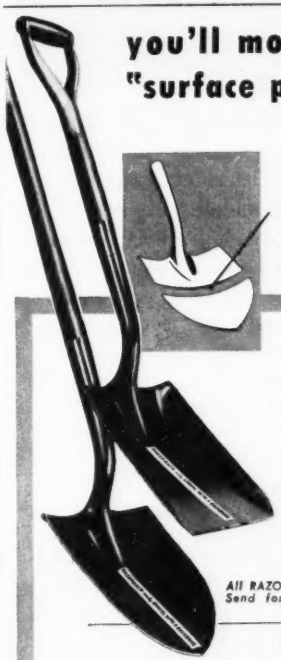
9903

CROSBY CLIPS

than all other drop-forged fasteners!

Fasten wire rope with CROSBY CLIPS. Safe, simple, speedy . . . applied anywhere by one man with one wrench. *Drop-forged*, not cast. Hot dip galvanized. All sizes . . . for 1/8" to 3" wire rope. Distributors everywhere; made only by AMERICAN HOIST AND DERRICK CO., St. Paul 1, Minnesota.

ALSO MAKERS OF THE AMERICAN HANDIWINCH AND AMERICAN BLOCKS AND SHEAVES

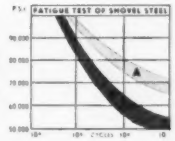


you'll move more loads with "surface peened" RAZOR-BACKS

strongest light shovels made, because they have a full-length backbone: The center section, where shovels get all their wear and strain, is 13 gauge thickness all the way from cutting edge to upper part of socket. The sides, where shovels never wear out, taper to 17 gauge. No other shovel has this correct construction.

2½ to 5 times tougher steel, because it's "surface peened": Modern cold-working process, following heat treatment, enables RAZOR-BACK steel to resist the constant bending that makes ordinary shovels break at the frog.

Standard A. S. T. M. tests of fine heat treated shovel steel show that "surface peening" increases resistance to bending fatigue 2½ times at 90,000 psi. 5 times at 80,000 psi.



All RAZOR-BACKS are deep hung and perfectly balanced. Send for Catalog, prices and distributor's name.

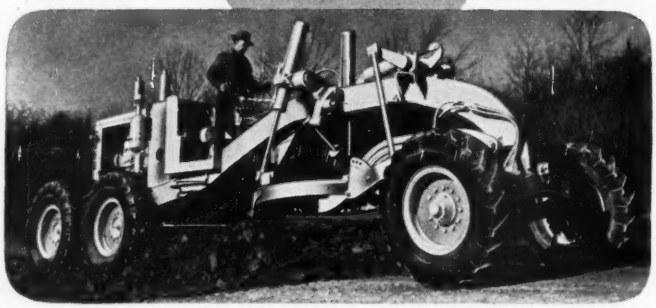
THE UNION FORK & HOE COMPANY
633 Hocking Street, Columbus 15, Ohio

STONE, BALLAST, INDUSTRIAL FORKS — ASPHALT AND ROAD RAKES

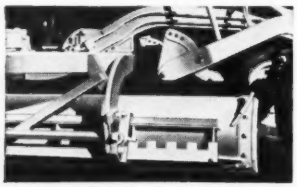
it's the NEW 100 HP

Heavy-Duty

® WARCO 4D-100 MOTOR GRADER



What do you want your NEXT motor grader to do? Pack more WORK-POWER? . . . Take more PUNISHMENT? . . . Operate TROUBLE-FREE even in roughest going? . . . Do MORE WORK in LESS TIME? That's what your next motor grader CAN do, if it's the heavy-duty WARCO 4D-100. It's got everything you want in a motor grader . . . *more work-power . . . big tires all around* for fully effective traction and flotation . . . *sliding moldboard* for extra reach . . . *accurate and positive adjustment* of blade and scarifier . . . *28" high-arched front end* for plenty of working clearance. Let your most experienced operator give it a real work-out. He'll tell you that "In *all* ways, Warco 4D-100 is your *best* motor grader buy."



Blade revolves 360° without removing scarifier or teeth . . . moldboard strongly reinforced against lateral stresses.

W. A. RIDDELL
CORPORATION
Bucyrus • Ohio

BUILDERS OF WARCO MOTOR GRADERS • HERCULES ROAD ROLLERS

(Continued from page 117)

business leaders bestirred themselves and lured that business to their door by offering every service to the oil man. They opened a laundry in Tulsa and new places to eat. They built the Robinson Hotel, and swung a bridge across the Arkansas River.

On September 8, 1900, the instruments of this young telegraph "ham" became paralyzed, and I was unable to make them tick out their usual clatter. I figured it was just a violent thunderstorm somewhere to the south, little dreaming that the city of Galveston, Tex., was in the grip of a hurricane and tidal wave that would prove to be one of the greatest disasters ever to befall an American city. The loss of life and property was so great that it was beyond comprehension, and nobody was ever able to give an accurate estimate of either. Conservative estimates placed the property damage at $18,000,000, and the loss of life at 6,000.

Rails Boost Oklahoma City

Back in December, 1898, when the coming of a railroad was of great historical importance, Johnston Bros. & Faught had just finished construction of the St. Louis & Oklahoma City R.R. between Sapulpa and Oklahoma City. That extension was promoted by Grist Mill (C. G.) Jones. It was financed by Frisco interests, and became a part of that system. At the coming of those Frisco trains conditions in Oklahoma City were bad, and this new rail outlet was one of the major factors that breathed new life into that city's progress.

It was another spring, 1901, when we moved our headquarters to Oklahoma City. My salary had been upped to $75 per month, and I rented a modest cottage at 609 North Broadway for $17 per month, and moved mother down from Wichita, Kan. The firm took space in the rear of Perry & Dowden's office, a site now occupied by the City National Bank & Trust Co. Oklahoma City was but 12 years old, and here's what it looked like in its youthful days. There were few sidewalks and when the rain beat down without mercy the citizens waded in red mud. Often on such occasions a light delivery wagon would take its stand at the corner of Broadway and Main Streets. There the driver would make a pocket full of change

(Continued on page 121)

The article with the lowest price tag can be tempting, can look like a bargain. Yet another brand, with a higher first cost, may be far more economical in the end — because of the longer, better service it gives.

You may find sometimes that Bethlehem wire rope is a bit higher in first cost than some other brand; but on the basis of long-range economy — *true* economy — we invite you to compare it with anybody's product, any place, any time.

Bethlehem has one of the finest, most modern rope mills in the world; a staff of engineers whose sole object is to build longer life and better service into Bethlehem ropes; and a field organization whose job is to study rope trends and rope uses in every industry. All this adds up to one thing — quality; the type of quality that in wire rope means Lower Cost per Unit of Work.

And that's the only real yardstick — the only *real* measure of economy.

BETHLEHEM STEEL COMPANY
BETHLEHEM, PA.

On the Pacific Coast Bethlehem products are sold by
Bethlehem Pacific Coast Steel Corporation
Export Distributor: Bethlehem Steel Export Corporation

UNIVERSAL

HAS THE ANSWER TO YOUR WASHING PROBLEMS WITH *"STREAM-FLO"* ENGINEERED WASHING PLANTS

Stationary washing plant with mechanical feed, conveyors, vibrating screen; water sprays, sand screws, loading bin, primary and secondary crushers, and stock piling conveyors. Electric powered.

Crushing screening and washing plant with primary jaw crusher, secondary roll crusher, scrubber classifier, conveyors, and bins.

Universal washing and screening plant with plate feeder, conveyor, two deck screen, 3-compartment bin, sand screw, and miscellaneous sprays, chutes and flumes. Gasoline or diesel power.

WRITE FOR COMPLETE FACTS

● Universal builds stationary and portable plants to meet any washing need. "Basic Unit" construction means lower initial cost, and "Stream-Flo" engineering assures a well balanced, smooth operating plant. Result—more yards per hour at less cost per yard. For profit-making production of clean, properly sized aggregate, investigate Universal.

UNIVERSAL ENGINEERING CORPORATION

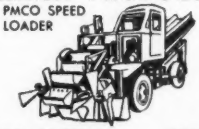
327 8th STREET, N. W., CEDAR RAPIDS, IOWA

DIVISION OF PETTIBONE MULLIKEN CORPORATION

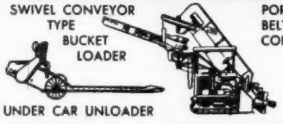
ENGINEERS AND BUILDERS OF "STREAM-FLO" ROCK, GRAVEL, AND LIME PLANTS
SCREENING AND WASHING PLANTS, CONVEYORS, APRON FEEDERS

OTHER PETTIBONE MULLIKEN PRODUCTS

PETTIBONE BUCKETS
HAISS BUCKET LOADERS



PMCO SPEED LOADER



SWIVEL CONVEYOR TYPE BUCKET LOADER
UNDER CAR UNLOADER

PORTABLE BELT CONVEYOR

PETTIBONE MULLIKEN CORP.
CHICAGO, ILLINOIS

GEORGE HAISS MFG. CO., INC.
BRONX, NEW YORK, N. Y.

(Continued from page 118)

ferrying mud - bound townsmen back and forth.

Those Oklahomans had got enough of their dirt streets, and the city dads were wrestling with the problem of selecting the proper type of pavement. When it was dry, clouds of dust swirled through the streets, and we paid 25c. per week to a sprinkling wagon for keeping the dust settled in front of our office. Attorney Shartell made several trips to our office getting data on construction costs—that was really the beginning of the city's first streetcar system.

Stiles Park and Carnegie Library were dedicated that year. The cream of Oklahoma's society gathered at the five-story Lee-Huckins Hotel—mighty elegant in its day, but a fire trap which burned to the ground in 1908. The two-story Grand Avenue Hotel, around the corner from our office —now the site of the Oklahoma Club—was the rendezvous for our construction force.

We'd just got well settled in Oklahoma City when the government decided to hold its last great land lottery, and proclaimed the opening of the Kiowa, Comanche and Apache Indian reservations. Registrations for the approximately 16,000 quarter-sections of land were to start July 10, at El Reno, and on the chosen site for a new town, which had been given the name of Lawton, near Fort Sill, O. T.

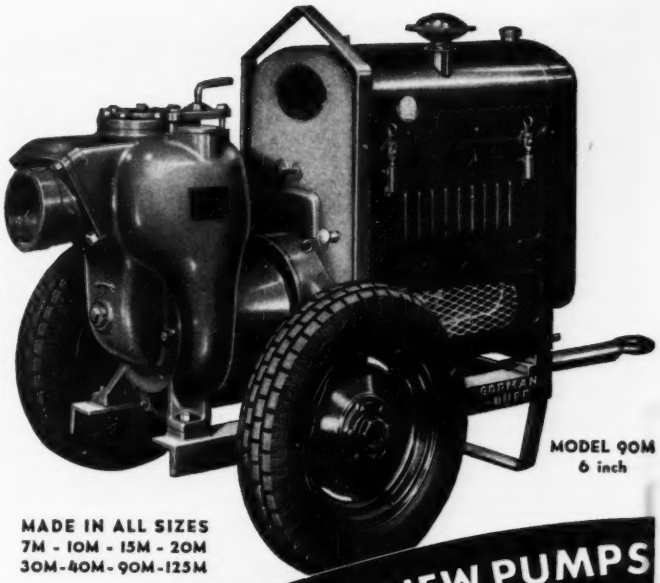
Joins Land Rush

Mother and I got our hopes up to rather a high pitch, so we boarded a jam-packed Rock Island train for El Reno to try for a homestead. The temperature was over 100 and everybody was sweating like a horse, but a tidal wave of land-hungry had swept in from all over the country.

The center of El Reno's business streets had been leased out to booths, refreshment stands. Notary publics were swamped filling out registration blanks and boomers were already lined up in front of the registration booths, and some 300 hopefuls slept in line. Registrations boomed into the third week, with a total of 167,000. The registered names were written on cards and inclosed in envelopes.

The envelopes were placed in a large box on a platform, well

(Continued on page 122)



MODEL 90M
6 inch

MADE IN ALL SIZES
7M - 10M - 15M - 20M
30M-40M-90M-125M

GORMAN-RUPP'S NEW PUMPS

CHALLENGE ANY PUMP TO MATCH THEIR PERFORMANCE

With a new complete line of Contractors' Pumps, Gorman-Rupp has topped their own past high record of performance with a better pump —

-- QUICKEST PRIMING
-- HIGHEST PRIMING
-- PUMPS MORE DIRTY WATER

Compare them for priming speed:

The new Model 15M (3") primes at 25 ft. suction lift in 61 seconds.

The new Model 90M (6") primes at 25 ft. suction lift in 44 seconds.

And the Gorman-Rupp is still the most simple pump —

No ports, no valves, no clean-out plates, nothing to cause stoppages.

Write for the new Contractor's Bulletin 8-CP-11

THE GORMAN-RUPP *Guarantee*

Our distributors are authorized to put a Gorman-Rupp Contractors' Pump on any pumping job, anytime, anywhere, alongside any other make pump, size for size. The Gorman-Rupp pump is guaranteed to pump more dirty water more hours, using less gasoline and to prime quicker than any other self-priming pump. If it isn't the best all around pump, our distributor will accept the return of the Gorman-Rupp pump and pay the user any installation expense incurred.

THE GORMAN-RUPP COMPANY
MANSFIELD, OHIO

PUMP RIDES AIRBORNE. . .TO EACH LOCATION!

ANOTHER EXAMPLE OF COMPACT, DEPENDABLE...

WISCONSIN HEAVY DUTY *Air-Cooled* ENGINE *Serviceability*

Whether riding airborne by helicopter . . . or "washing down" special shot-hole casings 90 ft. deep while engaged in geophysical exploration work . . . or handling any of a great variety of engine power field operations in construction service, Wisconsin Air-Cooled Engines pay off handsomely in terms of easy portability and heavy-duty dependability.

Combining compact design, light weight, and heavy-duty construction with plenty of reserve horsepower for the hard pulls, *plus* trouble-free AIR-COOLING . . . Wisconsin Engines meet the varying demands of climatic and work conditions. Weather-sealed rotary type high tension OUTSIDE magneto, equipped with impulse coupling assures easy starting and sure-firing. Tapered roller bearings at BOTH ends of the crankshaft provide maximum protection against bearing failure.

Supplied in 4-cycle single cylinder, 2-cylinder and V-type 4-cylinder types, in a full power range, 2 to 30 hp.

WISCONSIN MOTOR CORPORATION

World's Largest Builders of Heavy-Duty Air-Cooled Engines

MILWAUKEE 14, WISCONSIN

***ELECTRIC* WHEELS**

Designed to do the Job

Wheels and Axles are our business, and our engineers are well qualified to recommend the most efficient assembly for your product.

Our factory is modern and tooled for low cost production. We have supplied manufacturers in many different industries for more than 50 years.

Standard or Special, ELECTRIC Spoke-type or Disc Wheels are built for most types of portable equipment.

Send us your specifications and we will submit our recommendations.

ELECTRIC WHEEL CO., 2911 Pine, Quincy, Ill.

(Continued from page 121)

shuffled, and were numbered as drawn out. There were exciting scenes when the drawing started August 6, and which was witnessed by 25,000. Mother and I listened intensely with all our ears as they commenced to read out the numbers. The capital prize winners were James R. Wood, of Weatherford, O. T., and Miss Mattie N. Beal, of Wichita, Kan. These were considered the most valuable homesteads, and were estimated to be worth from $20,000 to $40,000. After the first day's drawing we would search long lists as published in the *Daily Oklahoman*, but never found our names among the winners.

The firm of Johnston Bros. & Faught and its successors did a lot for Oklahoma and Texas, and led all contractors in blanketing those two states with railroads. After completion of the line from Sapulpa south, they added to the Frisco mileage by constructing the Red River Texas & Southern, from Sherman south which provided an entrance into Dallas and Fort Worth for Frisco trains. That firm built the following extensions: Choctaw, Oklahoma & Gulf, from Weatherford to Elk City, O. T.; Fort Worth & Rio Grande Railroad, from Brownwood to Brady, Tex.; Arkansas Valley & Western, from Tulsa to Avard; Arkansas & Choctaw, from Hope, Arkansas to Ardmore, I. T.; Frisco, from Miami to Afton, O. T.; St. Louis, Memphis & Southeastern, from St. Louis to Memphis, Tenn.; Trinidad Interurban Railroad from Trinidad, Colo. to Cokedale; Extensions for the Chicago & Eastern Illinois Railroad in Illinois that gave it the shortest mileage between Chicago and St. Louis.

July 1903 found our mules and men swarming over Mile 142 and breaking dirt at this point in the huge mesquite pasture of Robert Driscoll. That point later became the site of the city of Robstown, Tex., so named after rancher Robert Driscoll. Here Johnston Brothers spun bands of steel rail that led down through the immense King Ranch and on to Brownsville, and a project, the St. Louis, Brownsville & Mexico Railway, eventually grew into 340 mi. of line (now Missouri Pacific) and converted the valley from a briar and cactus desert into one of the garden spots of the southwest.

Two years later our forces were busy on a rail line connecting Fort Worth, Dallas and Houston—the

shortest rail outlet through the heart of Texas. It became known as the Trinity & Brazos Valley Railway, now the Burlington-Rock Island.

Within 6 years I had worked up to a salary of $6,000 per year, the highest the old firm had ever paid anyone. With the passing of B. F. Johnston and George M. Faught, the surviving partner, P. M. Johnston, 1908, made the firm Johnston & Allhands.

In our first year of partnership the construction of new rail lines was so slow that July, 1908, found us in eastern Tennessee to look over our first highway job. We stopped at the Hale Springs Hotel in Rogersville—hotel, livery, feed and sales stable under same management. That county was calling for bids on a 15-mi. stretch of grading, building culverts and macadam. Time of completion was two years, but the grading was light. We figured on using convict labor for rock crushing, and for which we were to pay $1 per day, with same rate for guards; muckers $1.50 and foremen $3. There was considerable ditch rock to handle for proper drainage and we were leery about payment of estimates, so we came out fourth high.

Then in December, 1908, the new firm of Johnston & Allhands landed its first contract from James J. Hill's Burlington Railroad. It called for a completed rail line from Stamford, Tex., northwest into the 430,000-acre ranch owned by S. M. Swenson & Sons. That tract of land was known far and wide as the Spur Ranch, and that is why the town at the end of the line became known as Spur, Tex. In the same year we landed another contract for construction of the Quanah, Acme & Paducah southward from Quanah, Tex., and still another contract for building a railroad along the Bayou Tech, of Evangeline fame, northward from New Iberia to Port Barre, La. All those contracts were on the turnkey basis or mile of complete line.

We built many short line railroads for the king of wildcatters, Thomas B. Slick. That was in the day before good roads, when the only outlet for new oil fields was by rail. As I swung into my 40th birthday, we landed our first highway job. It covered 64 mi. of clearing, grubbing, grading, bridges and graveling in Van Zandt County, Tex. That was followed by a 92-

(*Continued on page* 124)

STRIPPED, MOVED, CLEANED AND RESET IN ONE HOUR AND A HALF!

THAT'S concreting progress that turns time into money! On the Saltsburg Tunnel job, where Blaw-Knox wall traveller and arch traveller Steel Forms are used, six pours are made a week, three on the sidewalls and three on the arch, with each pour covering 60 feet of length. *And between pours, there is no time wasted* . . . no delays for dismantling and reassembling . . . fewer operations are required, less material is needed, fewer workmen are necessary for the job. You get the better, smoother, more uniform construction that is impossible to duplicate with wood forms. Elimination of extra bracing and form-work allows a wide clearance to accommodate the passage of equipment.

What about *your* next job? Whatever you're building with concrete, from a big tunnel to a small sewer, you'll save time and money with Blaw-Knox Steel Forms. Take advantage of Blaw-Knox experience . . . over 40 years of building Steel Forms for the majority of outstanding concrete jobs . . . and get the benefit of Blaw-Knox engineers' consultation service that will help you attain better work at lower cost.

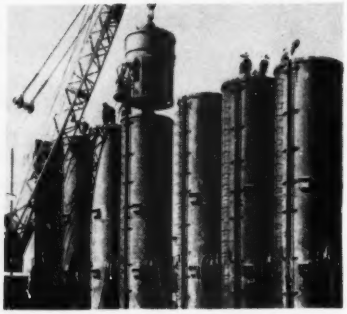
Detailed information in Bulletin 2035 will help you speed construction, lower costs. Write for your copy today.

BLAW-KNOX DIVISION
of Blaw-Knox Company
2086 Farmers Bank Building
Pittsburgh 22, Pa.

BLAW-KNOX STEEL FORMS
New York • Chicago • Philadelphia • Birmingham • Washington

VIBER SAVES TIME AND COST IN CONCRETE CONSTRUCTION

TESTS of new DESIGNS and DEVELOPMENT in VIBER EQUIPMENT PROVE INCREASED EFFICIENCY at LOWER MAINTENANCE COSTS

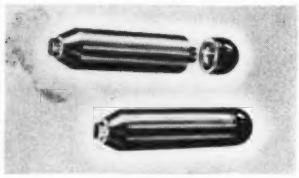


PX-6 EXTERNAL VIBRATOR EXTREMELY EFFECTIVE IN MANUFACTURE OF CONCRETE PRODUCTS AND HANDLING OF DRY MATERIALS.

The proper balance of amplitude and speed over a wide range produces marked improvement in the manufacture of concrete pipe and greatly increases the life of the forms. Many placement problems have been solved by this new vibrator.

VIBER RUBBER TIPPED VIBRATORS REDUCE FORM DAMAGE

Damage to expensive form lining materials necessitating frequent form replacement was the reason



for development of Rubber Tipped Vibrators. Severe tests on many large concrete jobs proved costly grinding due to damaged forms was greatly reduced. Another advantage of Viber's Rubber Tipped Vibrators is replaceable tip. Simply unscrew worn part and install new tip.

REVERSIBLE FEATURE PRACTICALLY DOUBLES THE LIFE OF CASINGS

Standard 6, 12 and 21 foot interchangeable Viber casings are reversible. Reversing is easily accomplished by unscrewing adapter and attaching it to the other end. All

cores are reversible. Viber casings are covered with durable, live, tire quality rubber.

For further information or descriptive literature on Viber equipment, please write Dept. 19

VIBER COMPANY • CONCRETE VIBRATORS SINCE 1931

726 South Flower Street, Burbank, California

(Continued from page 123)

mi. stretch in Benton County, Ark., and many other projects in Texas, Oklahoma and Missouri.

A good many persons remember imperfectly the condition of the construction industry in 1917. It was chaotic and disorganized. There was an utter lack of unity among general contractors, and as a whole they had but little status in the councils of industry and none whatever in the councils of government. Then came the memorable day of April 6, 1917, when Congress declared war. Camps or "cantonments" as they were called, began springing up all over our land for training an army of men. That war brought into sharp focus the need of an organization through which industry and government could cooperate for handling this war construction.

But matters rocked along until the Chamber of Commerce of the United States got around to calling a meeting on July 18, 1918, for the purpose of forming a National Federation of building industries. The general contractors at that meeting withdrew and set up a committee of their own to organize a national association.

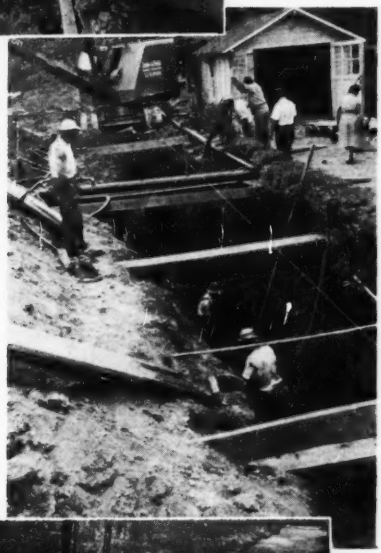
My firm, then headquartering in Springfield, Mo., received a copy of the call from chairman Dan A. Garber to be present at a meeting to be held in the LaSalle Hotel in Chicago, Nov. 20-21, 1918, for the purpose of pooling our strength and influence into an association. In the fall of that year the Germans were suing for peace, but many felt they were only camouflaging. On Oct. 16 the Kaiser abdicated. We were in the midst of the 4th Liberty Loan Drive. The Spanish influenza was raging throughout our land, and all public meetings had been banned. Seven deaths from influenza occurred in Springfield, Mo., in one day. It looked as if our Chicago meeting would have to be cancelled. But luckily, on Nov. 15, the ban was lifted—a ban that had lasted for 39 days in southern Missouri.

The meeting convened at the LaSalle Hotel, with about 200 present. Everyone seemed to be jubilant as different ones let off steam and talked of the profound significance of that meeting for the future of contracting. When the roll was called there were 97 charter members of which my firm was one. The highlight of Nov. 21 was a banquet given the delegates by

(Continued on page 127)

LIVINGSTON SEWER PREDRAINED PERFECTLY BY MORETRENCH WELLPOINTS

1. Installing wellpoint system.



2. Excavating and laying sewer pipe — "in the dry" — one day after system started operating.

3. One day after job was finished and wellpoint system disconnected.

The Contractor Writes:

"The section where we used Moretrench Wellpoints was in a very low and swampy area where sheeting and pumping were most impractical, if not impossible.

"Your wellpoint system worked out most successfully for us, and we thank you for your fine service and cooperation."

DeCICCO AND OCHS
Livingston, N. J.

Large or small, your wet work will profit from Moretrench equipment, experience and efficiency. Send for an estimate on making wet jobs pay.

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No Job too Big or Small for BARCO

For heavy concrete breaking, BARCO MODEL H-6B

FOR heavy concrete breaking and backfill tamping, the Barco Hammer (H-6B) is unbeatable. Its portability means easier handling, plus the ability to get jobs done in difficult or hard-to-reach spots. Barco is packed full of power, deals a smashing battering attack that never slackens no matter how tough the going. And as for profit, Barco's mechanized muscles do more work at lower cost. For lighter work, especially frost breaking, use Barco Hammer (J-2). Write Barco Manufacturing Company, 1812 Winnemac Avenue, Chicago 40, Illinois. In Canada: The Holden Co., Ltd., Montreal, Canada.

For breaking medium and light concrete, and hard or frozen ground, BARCO MODEL J-2

FREE ENTERPRISE—THE CORNERSTONE OF AMERICAN PROSPERITY

BARCO PORTABLE HAMMERS • BREAKING · DRILLING DRIVING · TAMPING

(Continued from page 124)

the General Builders of Chicago. Thus was the start of the Associated General Contractors of America.

Daniel Garber has been dead many years now, but none of us who knew him will ever forget him, or how he gave of his time and energies to make our Association a success. Then there was W. A. (Dad) Bechtel, who worked so enthusiastically sponsoring a Dad's and Son's breakfast—sons who were then being groomed for construction careers, and many of whom have since taken over. Another great contractor at that charter meeting whose memory I shall always cherish was that grand old man of construction, W. O. Winston, whose mules provided a way for so many miles of railroad in the northwest, and whose company is still carrying on, adhering to the objects and ideals set forth in our Association's by-laws.

Many years after completion of the Brownsville Line one of my cronies, J. H. Hedges, made the suggestion that I give my personal reminiscences of the opening of the Valley, and tell of what rail transportation had meant to that primitive country "before we are all gone." That was the day the writing bug really hit me, and since which time I have done three books. The story of the St. Louis, Brownsville & Mexico project was titled "Gringo Builders." My second book, "Boll Weevil," covered the construction of the Trinity & Brazos Valley Railway.

The grading for all the extensions built by Johnston Bros. & Faught and their successors, as well as a goodly portion of the work handled by my various firms, came from the sweat of those unsung heroes of railroading's early days, the pick-and-shovel men, with the old mule powering primitive tools. And more changes in the method of moving earth have taken place within my generation than in all the previous centuries put together. The reward of the American system of free and competitive enterprise so inspired Yankee ingenuity and inventive talent, that the honor for giving mankind his modern and revolutionary earthmoving tools belongs to the United States. I was amazed to find that the story of the evolution of earthmoving tools had never been told, so my third manuscript, "An Album of Tools," now in manuscript and mostly told in pictures.

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BELT FASTENERS
AND RIP PLATES

FOR HEAVY CONVEYOR AND ELEVATOR BELTS OF ANY WIDTH

Flexco HD Fasteners make a tight, butt joint of great strength and durability . . . distribute the strain uniformly. Operate smoothly over flat, crowned or take-up pulleys. Made of steel, Monel, Everdur and Promal.

Flexco Rip Plates are for repairing and patching damaged belts.

Ask for Bulletin F-100

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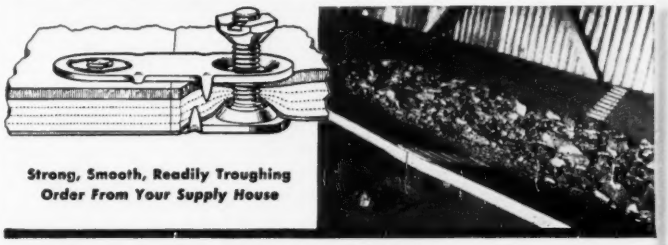

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USE GOOD TACKLE BLOCKS—check the age of the blocks you are now using.

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MADESCO blocks will extend the life of your wire rope, due to Timken roller bearings, bronze bushings or automatically lubricated sheaves.

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Why did you buy a MICHIGAN?"

"Because it Moves Dirt FAST!

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Write for Bulletin 100—
"On the Job With MICHIGAN"

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you can buy
a brand new
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TRUCK CRANE
complete with
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little as $10,250
F.O.B. factory?

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495 SECOND STREET, BENTON HARBOR, MICHIGAN, U.S.A.

1 . . . WORKMAN INSERTS heavy asphaltic paper strip in a jig that will be used to place strips in freshly laid concrete as dummy contraction joint.

EQUIPMENT FOR

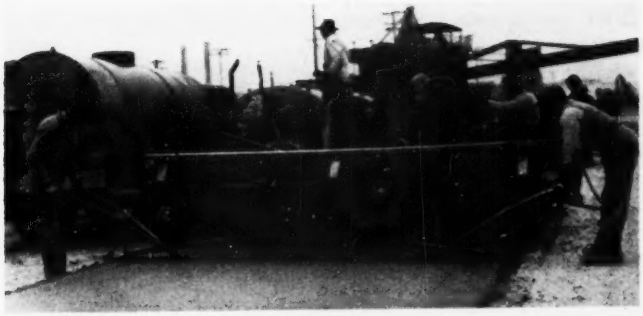
PLACING STRIPS of heavy roofing paper for dummy contraction joint is a requirement in California concrete highway paving work. Thus far, each individual contractor has devised his own system of doing this work. The accompanying photos show the method used by Fredrickson & Watson on the East Shore Freeway, Oakland, Calif.

Dummy Contraction Joints

The California specifications require a dummy contraction joint each 15 ft. Thus, in a big paving job the cost of placing the blanks mounts up and it pays contractors to develop effective procedures.

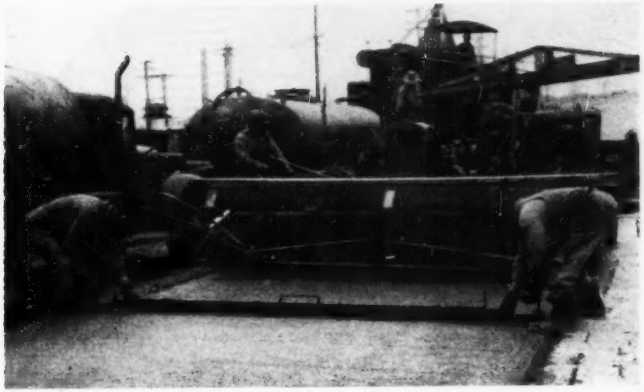
The strips of heavy asphaltic roofing paper are ⅛ in. thick and less than 2 in. wide and must be protected while they are inserted into the fresh concrete. Fredrickson & Watson does this in two steps. First a groove is formed in the concrete just after the second pass of a vibratory screed. Next a blank is placed in the freshly poured concrete by a special jig. As a final precaution, a hand-operated float goes over the surface to push down pieces of aggregate that may be near the surface. This prevents damage to the blank from the mechanical float finisher.

The East Shore Freeway is a project of the California Division of Highways, George T. McCoy, state highway engineer. Henry A. Simard was resident engineer on the Fredrickson & Watson contract.

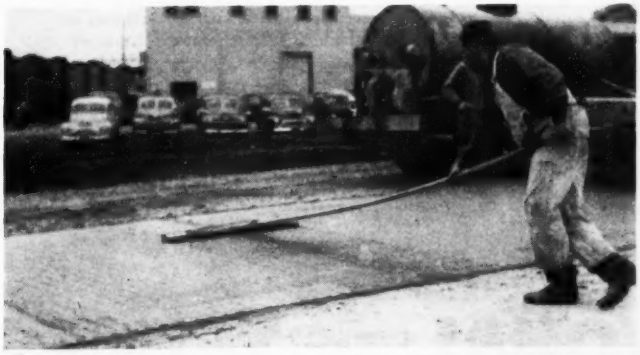


2 . . . FIRST STEP in forming contraction joints is to make groove in concrete with tool operated by two men. When not in use, this tool is suspended from back of Jaeger-Lakewood vibratory screed.

CONTRACTION JOINTS



3 . . . NEXT, strips are placed in special jig and inserted in pavement. After jig is pushed down to proper depth, lever operated by workman releases paper strip.



4 . . . FINAL STEP is to smooth over pavement where strip had been placed so no pieces of aggregate near surface can catch on to float finisher and move contraction joint blank.

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NOTICE the leveling screws on the instrument leveling head above. See how they are always totally enclosed — regardless of their position "in" or "out". This means all dust and dirt are sealed out — their precision sealed in.

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THE OWNER of this International KB-7 uses a dozen International Trucks in his engineering work. (Four are dump trucks, 2 flat beds, 1 oil spreader and 5 Concrete Ready-mix.) He knows what they can do, and how well they do it.

He speaks from experience when he says:

> "The new KB-7 dump truck is a pleasure to drive, and has been getting 9½ miles to the gallon of gas under conditions which should use a good deal more—that is, a lot of starting and stopping and short hauls."

And we aren't exactly speaking as amateurs in the business when we tell you this:

International Trucks are the products of 42 years of real truck engineering. They are available in 22 basic models, 1000 truck combinations, gross weight ratings from 4,400 to 90,000 pounds—to give you the truck that's specialized right for your job. And, they're backed by the nation's largest exclusive truck service organization.

Talk to any International Truck owner. Talk to any International Truck driver. Then you'll know why it will pay you to see your International Truck Dealer for the very next truck you buy. Call him soon.

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"Give us the tools . . ."

The 81st Congress Can Halt the Administration's *SOCIALIST PROGRAM*

In his speech at Massachusetts Institute of Technology, Winston Churchill said that America's possession of the atomic bomb is all that has kept Soviet Russia from overrunning Europe and bombing London.

Our State Department knows that there has been another deterrent to aggressive warfare by Russia and a deciding one. That deterrent is the superior industrial strength of the United States. But once Russia approaches our industrial strength, then watch out! For Stalin or no Stalin, there will be trouble. Therefore, the simple table below is worth every American's careful reading. It shows in percentages what Russia did with her national income in 1948 and what we did with ours:

	USSR	USA
Civilian use	60%	79%
New capital equipment and public works	21%	12%
Foreign aid		2%
Defense	13%	5%
Building of inventories and war stock-piling	6%	2%

These figures for Russia come from *The* (London) *Economist*, Britain's influential economic journal.

These figures are estimates based on information from behind the Iron Curtain, and so cannot be checked directly. But they fit with what is known of Russian development.

The table shows that Russia is straining every resource to build up its industrial strength. When Russia's effort is measured in *dollars*, and compared to ours, the figures show:

Where we spent $20 to $21 billion for new industrial plants and equipment last year, the Russians spent $12 to $14 billion.

But while we used about $9 billion of this to *replace* old equipment, the Russians spent no more than $2 billion for replacing old equipment. The Russians had much less worn-out and obsolete equipment to replace. They could concentrate their efforts on expanding their industries and buying new equipment.

So—we used only $11 to $12 billion to *expand* our industries.

And the Russians used almost as much to expand theirs—$10 to $12 billion.

Russia is gaining industrial strength as fast as we are—and may soon be gaining faster. The more she gains and the faster she gains on us, the greater is the danger of war.

continued on next page

American industry is pushing modernization and expansion hard. It is doing an heroic job. McGraw-Hill's recent survey* shows that *industry* already has in hand plans to build plants and buy equipment in the next five years adding up to $55 billion. Industry plans that investment—*and much more—if it can get the money.*

On those plans of *industry* depend *our* national security.

If these plans of ours are cut back, the Russians will be years closer to their goal of industrial equality—the strength that they need to wage aggressive war successfully.

But more and more our industry's plans are being menaced by socialist policies in Washington. The President continues to urge a further increase in the tax on corporate profits, even though federal taxes alone now take 38 cents of every dollar of profit. He wants $3 billion more in taxes on corporate profits now, plus added personal taxes.

Last year corporations spent almost two-thirds of their profits—about $13 billion—for new plant and equipment. This year corporation profits will be lower than last year's $21 billion, perhaps by 20 per cent. Subtract a fifth or more from last year's profits. Then adopt the President's proposal and take $3 billion more in corporate taxes and you raise havoc with planned expenditures for new plant and equipment.

Approval by Congress of the President's tax program would cut industry's program of plant and equipment development by a third or more. That means a major blow to our prosperity as well as our national security. For as capital investment goes, so goes general prosperity.

Further serious damage would be done by Congressional approval of the President's industry-control bill. The so-called Stability Act of 1949 (the Spence Bill) would severely check industrial progress. That bill would put the federal government in the business of providing the added industrial capacity which the tax program would prevent private industry from doing for itself. It would be hard to conceive a better and surer way to dry up private investment in new plant and equipment. For every dollar of government investment will scare away many times more dollars of private investment. People will not want to risk their money in businesses competing with the U. S. Treasury. At the same time it will attack private investment in another way. It means that government would spend your income for you instead of allowing you to spend or invest for yourself. That is the high and quick road to socialism.

American industry needs right now great courage and incentives if it is to carry out its tremendous building program. It needs also a release from the program of a socialist administration in Washington with its systematic discouragement of enterprise and risk taking.

Above all, industry needs assurance by the actions of the 81st Congress itself that there is a future in this country for a system of dynamic capitalism, functioning in a free society. By acting now to strengthen the American people's faith in their industrial system, by providing needed incentives for management and investors, by protecting industry's capacity to buy new equipment, the 81st Congress can sustain American industrial progress and keep us united and strong.

But if we kill freedom of industrial planning and action by unneeded taxes and government controls we put ourselves—and our friends all over the world—in dire peril.

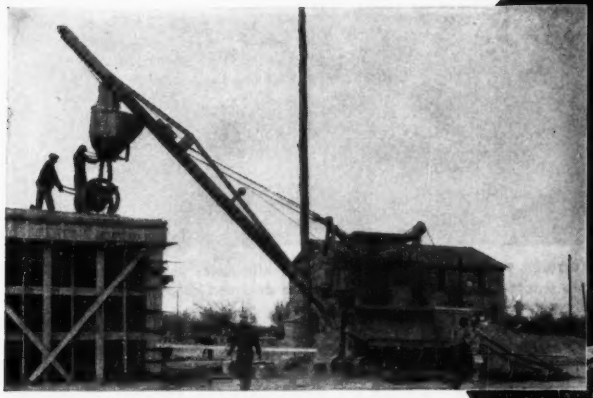
Nothing would please the Communists more.

James H. McGraw, Jr.

President, McGraw-Hill Publishing Company, Inc.

***A complete report on our national survey may be obtained by writing McGraw-Hill Publishing Co., 330 West 42nd St., New York 18, N. Y. This is one of a special series of editorials on industry's needs for new plants and equipment.**

HOW WOULD YOU DO THESE JOBS?



This machine is alternating between pouring to forms and loading concrete buggies. No ramps or cranes required.

(CENTER)
Feeding two Pumpcretes on a sewer job.

(ABOVE)
Loading a concrete truck on a subway job.

HERE are simple every day pouring jobs on which time and money can be saved over ordinary methods. A MultiFoote Paver with the HighLift Boom and MultiFeed Bucket will pour right to forms or conveying equipment and eliminate mixer, crane, false work and in many cases elevator or hoisting equipment.

It assures more uniform delivery of concrete, saves time for concrete buggy men, and makes possible the direct charging of Pumpcrete machines or concrete trucks.

Your MultiFoote HighLift Boom has a lift of 23 feet with clearance under the bucket and your MultiFeed Bucket will deliver a shovelful or a barrowful. Here is a better answer to your retaining wall, one story building wall, abutment construction and concrete footing problems. Your MultiFoote gives you new versatility in job bidding.

Ask for the booklet *"How Would You Do These Jobs?,"* showing how the HighLift Boom has simplified pouring jobs. Don't plan your next contract without looking into the HighLift Boom!

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SMOOTH ACTING RAM of SAE X1112 steel, machined and ground to minimum tolerance.

Put a Simplex Hydraulic to work on your tough jacking jobs to save time and manpower. Available in eight models with capacities from 3 to 100 tons — safety-tested to 50% over rated capacity.

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1008 South Central Avenue
Chicago 44, Illinois

REAR POWER PLANT on new Euclid scraper eliminates push cat and gives extra boost to tractor on steep grades. Engine is designed as part of scraper, cannot be uncoupled.

Euclid Puts Power Booster Behind Wagons and Scrapers

POWER on the 18-yd. bottom dump wagon and its new 18-yd. scraper has been doubled by Euclid Road Machinery Co. of Cleveland by adding a 190-hp. diesel engine at the rear of each machine. Both units are pulled by the conventional Euclid 190-hp. diesel 4-wheel tractor.

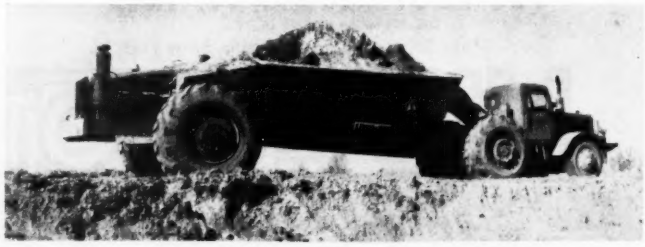
Installation on both types of equipment is similar, simply the engine and transmission mounted on the rear axles. The pusher engine is controlled by the tractor operator and the engines can be used together or separately.

The two engines on each unit are synchronized through hydraulic torque converter drive and torquematic transmission. The drive arrangement also permits selection of three speeds forward and one reverse with semi-automatic clutching under full power with no pause for declutching.

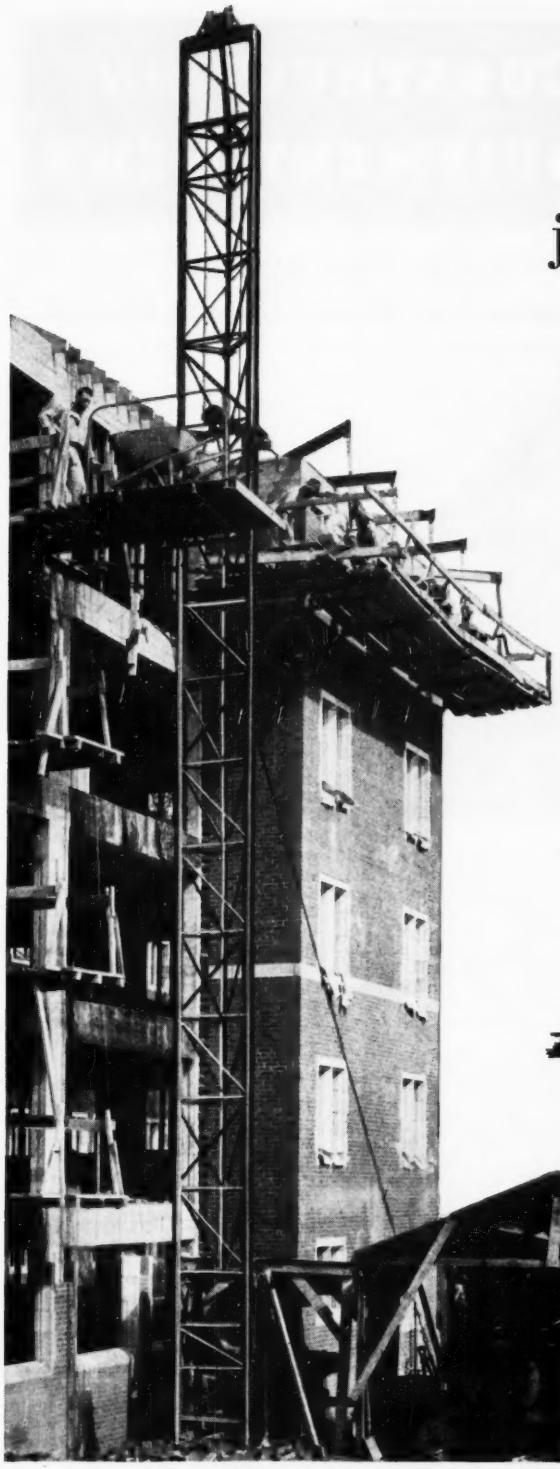
The extra-power wagon is designed to operate over bad ground and on jobs where haul roads are impractical, such as levee and embankment work. Introduction of the scraper puts Euclid back into the scraper field for the first time since 1939, though a conventional model scraper was exhibited last summer at the 1948 Road Show in Chicago.

Elimination of the push tractor during loading and more power on steep grades is the purpose of the extra engine on this scraper. The scraper is fitted with 2700x33 rear tires and turns within its own length of 44½ ft.

Both units have shown up well in extensive field tests under various ground and hauling conditions.



POWER of 18-yd. Euclid wagon is doubled by addition of 190-hp. diesel engine mounted over rear wheels. Extra engine on both wagon and scraper is controlled by tractor operator. Drive is through torque converter.



This elevator just grew ten feet!

It's no trick for an AMERICAN Portable Material Elevator. When these workmen needed additional height, they used a gin pole to raise a ten-foot section and bolted it in place. And it's just as simple to add even more sections . . . up to 90 feet of platform lift.

That's just part of the story. Hauled on a truck to the job site, the AMERICAN Material Elevator is assembled in two to three hours. The 47-foot tower is pin-connected to the main frame and raised quickly and safely by its own hoist. Then you're ready to lift brick, cement and other building materials in 2500-pound loads at a smooth 90 feet a minute.

Can an ordinary wooden tower match this easy, cost-cutting assembly and fast operation? Consider the cost of labor and timbers . . . the never-ending job of keeping it in safe condition . . . the amount of lumber that's bound to be wasted. And don't forget that repeating this process on every job costs you that much more.

You can usually rent a Material Elevator from your AMERICAN Hoist distributor. Then, after you see what it can do on the job, it's a safe bet you'll want to own your own.

American Hoist

and DERRICK COMPANY

St. Paul 1, Minnesota

Plant No. 2: So. Kearny, N. J.

Sales Offices: NEW YORK • CHICAGO • PITTSBURGH

Hauled knocked down on one truck.

Assembled in a few hours.

Hoist raises the tower.

American Hoist
and DERRICK CO.
St. Paul 1, Minnesota

9252

● Please send me a copy of the new AMERICAN Material Elevator Catalog.

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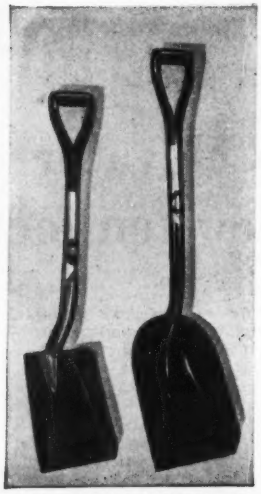

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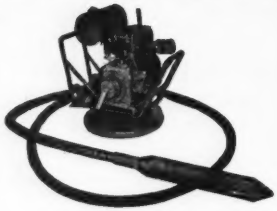

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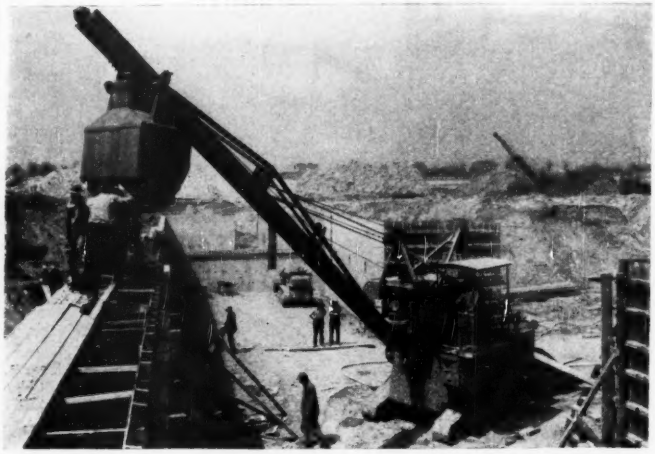
of Construction Machinery and Materials

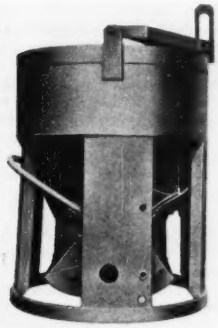


HIGH-LIFT BOOM ON PAVING MIXER—Available for both single and double drum (34E) MultiFoote concrete paving mixer, high-lift boom controlled from operator's platform and held in any position above ground provides 23-ft. bucket clearance. This feature enables paver to be used in a variety of work such as bridge abutments, retaining walls, parapets, footings and walls for general building construction. Boom will work flat to permit operation under steel structures. Useful in loading concrete buggies on structures. Applicable to general concrete placement for bridges and buildings, in addition to paving work.—**The Foote Co., Inc., 1910 State St., Nunda, N.Y.**

TRUCK-MOUNTED LOADER—For handling loose materials such as sand and gravel, stone, coal, earth and snow at a rate of 3-5 cu.yd. per min., truck-mounted loader is equipped with hydraulic controls for one-man operation. Has 29 20-in. malleable iron buckets and spiral feeders. Can be mounted on any standard 1½- or 2-ton truck, preferably with short wheelbase. Truck engine provides power through heavy-duty power take-off. Safety clutch prevents breakage when buckets strike obstruction. Discharge conveyor can be turned to any desired position within 180 deg. —**Eagle Crusher Co., Inc., Galion, Ohio.**

SAW BLADE TO CUT SIDING—New blade for Model A-4 Guild power saw cuts slate-surfaced insulating siding. Teeth have no set; they are ground to knife edge on periphery. Blade can be resharpened by holding a stone against it while running. Siding faced with slate particles is cut from rear surface to a depth which just avoids the slate; the siding then breaks off clean.—**Porter-Cable Machine Co., Syracuse 8, N. Y.**

SHOVELOADER — Designed for mounting on a Case VAI tractor, loader has a maximum lifting capacity of 1800 lb. and can be equipped with either a ⅜-cu.yd. material bucket or a ¾-1 cu.yd. snow bucket. Features include automatic scooping action and split-second or slow dump. Design keeps load in balance and free from spillage after bucket is filled.—**Lull Mfg. Co., 3612 W. 44th St., Minneapolis 6, Minn.**



LOW-SLUMP CONCRETE BUCKET —Manufactured in sizes of 2, 3, 4, and 8 cu.yd., new "Lo-Slump" concrete bucket, designed for heavy-duty requirements on big dam construction, discharges mass concrete with cement content as low as two bags per cu.yd. and slumps down to ½ in. using 6-in. aggregate. Bucket deposits these mixes without segregation. Extra large discharge opening is controlled by double clam discharge gate that can be operated manually or by compressed air. For easy hooking, hinged bail link always stands vertically and is slotted to give it considerable vertical hooking range. Bottom slopes of bucket above short cylindrical discharge section are approximately 68 deg. Low over-all heights are maintained by use of hinged bail, making it unnecessary for bucket hooker to reach across half of the bucket as with the usual rigid bail. On discharge unusually large 42-in. dia. center opening prevents arching of concrete. Segregation is prevented by folding action of concrete flow from center of bucket. The 6-ft. dia., 4-yd. size bucket weighs only 4,000 lb. Rubber seal, adjustable for wear, is furnished on discharged throat to make gate grout-tight.—**C. S. Johnson Co. (Koehring subsidiary), Champaign, Ill.**

THE OLD MAN'S GOT EVERYTHING ON THAT FORM BUT THE KITCHEN SINK!
HE AIN'T TAKIN' NO CHANCES WHEN WE AIN'T ON A RICHMOND JOB!
INSIST ON RICHMOND ... AND BE SURE IT'S RICHMOND!
Richmond
SCREW ANCHOR CO., INC.
81-838 LIBERTY AVENUE · BROOKLYN 8, N.Y.

DIG REAL DIVIDENDS
WELLMAN
Williams Type
Welded Buckets
Operators prefer the Wellman Bucket for its balance, easy handling, and digging power. Owners prefer the Wellman Bucket for its bigger payloads, lower maintenance cost. These features are not accidental. Wellman pioneered in welded construction of rolled steels which make these buckets lighter, stronger, for greater yardage at lower costs. In all types and sizes, you'll do better with a Wellman!
There's a Wellman Bucket for every service
THE WELLMAN ENGINEERING COMPANY
7017 CENTRAL AVENUE CLEVELAND 4, OHIO

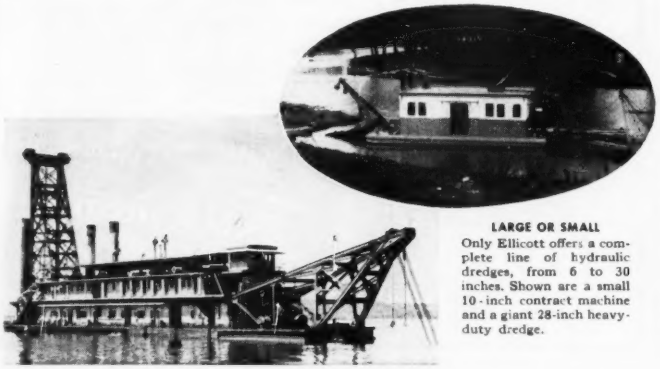
EXCAVATOR AND CRANE—Three new models include ¾-cu.yd. crawler-mounted shovel, dragline, crane and hoe. All basic motions are controlled by air. Shovel model is crawler-mounted, while crane model is mounted on a truck-type chassis. Air tube clutches apply metered air power with smoothness to working parts.—**General Excavator Co., Marion, Ohio.**

STEEL-WOOD LOCKERS—Entire framework and doors are of steel, while all other parts are of steel reinforced Masonite. All steel parts are finished in green enamel and Masonite is natural brown color. Equipped with recessed handle into which number plates fit. Lockers are made in both single and double tier. Accessories include steel sloping tops and closed bases.—**Lyon Metal Products, Inc., Aurora, Ill.**

RUBBER TRAFFICONE — Rubber Trafficone has appearance of steel, yet is made of collapsible rubber. Cone is of durable flexible construction to minimize frequency of replacement because of breakage, distortion or wear. Light weight enables one man to set up these traffic barriers in little time. Can be stored in minimum space by stacking.—**Enterprise Development Corp., Burbank, Calif.**

HIGHWAY MARKING PAINT—For traffic stripes, paint known as Pliolite S-5 uses a synthetic rubber resin which is non-oxidizing and eliminates tendency to "skin" or settle. Spraying is accomplished with little or no bleeding and the paint has good penetration through dirt and grime.—**Goodyear Tire & Rubber Co., Akron, Ohio.**

ASPHALT MIXER—"Multi-Pug" asphalt mixer has capacity of 1 ton per min. and weighs 1,000 lb. Proportioning of aggregate and asphalt is volumetrically controlled. Powered by two-cylinder 14-hp. Wisconsin air-cooled engine. Asphalt pump of positive displacement type has 20 gpm. capacity. Can be used as a stationary plant or adapted for use as a mix-spread unit to which aggregate and asphalt are fed and proportioned from dump truck. Other sizes of mixers are available up to 10 ton per min. capacities.—**K. E. McConnaughay, West Lafayette, Ind.**



LARGE OR SMALL
Only Ellicott offers a complete line of hydraulic dredges, from 6 to 30 inches. Shown are a small 10-inch contract machine and a giant 28-inch heavy-duty dredge.

How ELLICOTT hydraulic DREDGES
operate at Lowest Cost under all conditions!

ELLICOTT is the only organization that builds and designs hydraulic dredges and dredge components exclusively . . . there is no divided responsibility. That means each Ellicott Dredge is a *balanced unit* because all components work as a team with highest efficiency. Ellicott design also means operating with a minimum of skilled labor, resulting in overhead savings.

Ellicott service starts by designing your dredge for operation under varied conditions so that it outlasts any temporary work. *Proper hydraulic design* eliminates unnecessary wear, and parts that must wear under operation are easy to reach, inexpensive to replace, thus cutting maintenance costs.

Under all conditions, Ellicott Dredges operate at the lowest cost per cubic yard and they are designed for long life. Over 75% of the Ellicott Dredges built before 1928 are in operation today! For economy, long life and usefulness, specify Ellicott. You'll find Ellicott's 63 years of experience will give you complete satisfaction. For complete information, write today for the latest Ellicott Catalog to: ELLICOTT MACHINE CORPORATION, 1605 Bush Street, Baltimore, Maryland, U. S. A.

● **COMPLETE LINE** from 6 to 30 inch equipment for all dredging requirements.

● **63 YEARS OF EXPERIENCE** with hydraulic dredges.

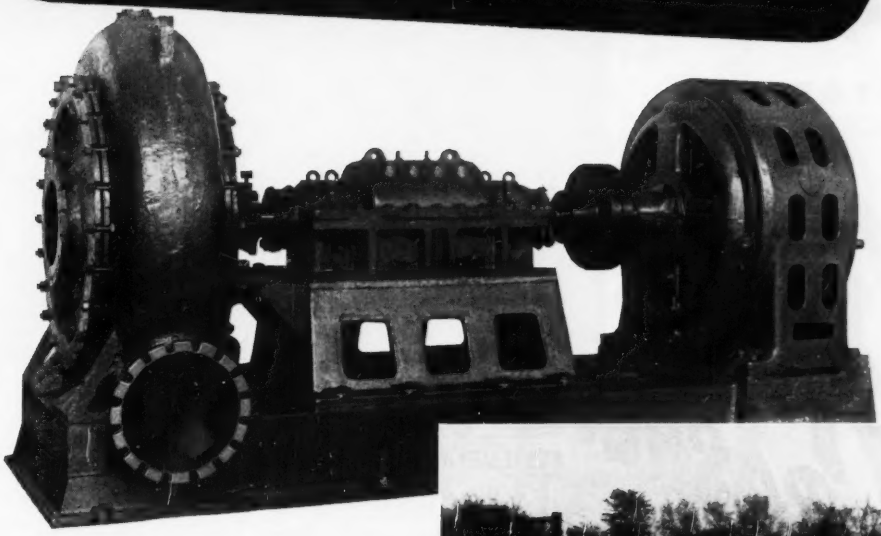
● **UNDIVIDED RESPONSIBILITY** . . . designed, built, delivered under one Ellicott contract.

● **PROVED PERFORMANCE** in the U. S. A. and abroad.

ELLICOTT HYDRAULIC DREDGES

any type — any size — any service

700,000 Ton Shell Life....



with an AMSCO DREDGE PUMP

Kershaw Mining Co.'s dredge "Chickasaw" pumping aggregate (45% gravel, 55% sand) on the Illinois River. Amsco type XH 15" pump is used.

The record of this Amsco Pump is impressive. Built in 1929, it has been in almost constant use ever since . . . and is still giving "excellent service", according to reports from Kershaw Mining Co. For example, the latest replacement was a shell after the pump had handled about 700,000 tons of material through it.

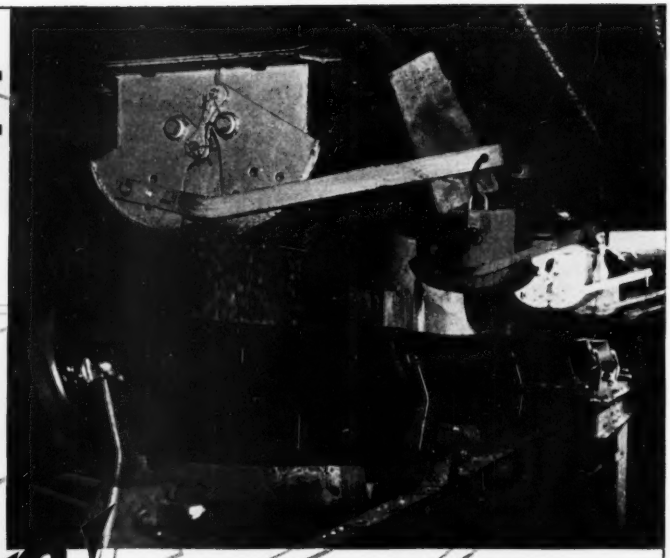
Long life and efficient service are the rule, rather than the exception, with Amsco pumps. Simple, rugged design is one reason. Another is the use of manganese steel castings for the water end . . . for only manganese steel can withstand the shocks of sucked-in boulders combined with the drastic wearing action of sharp sand and gravel. For complete information concerning Amsco dredge pumps, write us.

AMERICAN Brake Shoe COMPANY

AMERICAN MANGANESE STEEL DIVISION
CHICAGO HEIGHTS, ILL.

Foundries at Chicago Heights, Ill., New Castle, Del., Denver, Colo., Oakland, Calif., Los Angeles, Calif., St. Louis, Mo. Offices in principal cities. In Canada: Joliette Steel Limited, Joliette, Que.

AGGREGATE IS A NOTORIOUS GATE CRASHER!

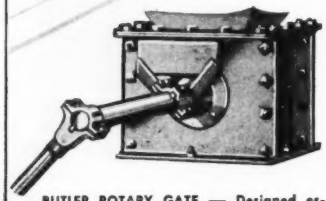


TREMENDOUS impact and tremendous wear, — those are the forces against which all gates on concrete plants, batching plants and sand and gravel plants must fight.

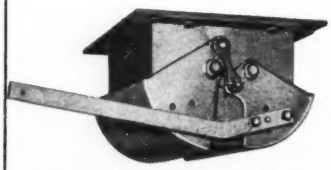
High volume production demands filling and discharge gates that operate smoothly, quickly and accurately; — gates *engineered* to take punishment and like it.

Long-lived BUTLER Gates are jam-proof and clog-proof. And quick-acting BUTLER Gates actually increase an operator's speed, — all characteristics that mean a welcome, extra profit.

BUTLER foresaw the upward swing in concrete production and diverted critical steel to building a stock of gate equipment. A limited stock, — it's true, for steel deliveries are still uncertain, — but for those who place their orders now, immediate shipments are possible.



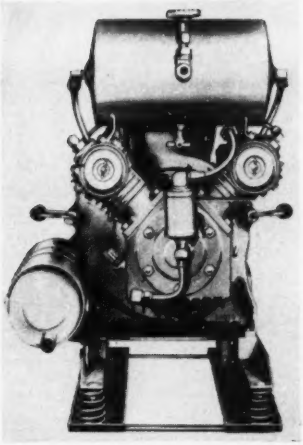
BUTLER ROTARY GATE — Designed especially for handling cement. Carefully machined rotor fits tightly yet operates easily, — allows no leakage. Rotor may be removed for cleaning.



BUTLER CLAMSHELL GATE — Ideal for sand, gravel, crushed stone. All steel construction, electric arc welded. No cast gears to break or jam. Easily and quickly operated by a simple, fast-acting toggle.

BUTLER BIN COMPANY

WAUKESHA, WISCONSIN



LIGHT WEIGHT COMPRESSOR—Unit known as "Little Workhorse" consists of a V-type, two-cylinder, single-stage compressor direct-connected to a 4½-hp. air-cooled engine. Compressor has a 2½-in. bore with 1¼-in. stroke and operates at 3,000 rpm. Equipped with automatic centrifugally actuated clutch which momentarily frees engine from compressor for starting but re-engages at about 1,500 rpm. Continuous operating pressure is 100 psi. Length, 29 in.; width, 21 in.; height, 27 in.; weight 117 lb.—**Davey Compressor Co., Kent, Ohio.**

TRUCK-MOUNTED CRANE AND EXCAVATOR—New ½-yd., 10-ton truck-mounted crane and excavator called the Corsair, travels at truck speeds, swings at 5½ rpm. and is convertible to all crane and shovel attachments. Six-wheel, tandem type carrier, built especially for crane mounting is of 16-in., 45-lb., steel I-beam construction. Improved boom clearance and visibility are achieved by an offset, one-man cab and tapered frame ends. Power is supplied by a 6-cylinder gasoline engine which develops 105 hp. at 3,200 rpm. Comparable diesel engine is optional.—**Wayne Crane Division, American Steel Dredge Co., Inc., Fort Wayne 1, Ind.**

8 YEARS DEVELOPMENT

ON FIELD TESTS IN EVERY TYPE OF PROSPECTING AND STRIPPING THROUGHOUT THE WORLD.

Also available in the popular STANDARD ONE-SPEED DRILL

The Parmanco Two-Speed Transmission Drill is designed to meet the requirements of the general prospecting field where it is not necessary to drill in solid limestone. Special sliding frame permits drilling and pulling of augers without moving drill. New design of chuck eliminates all hand operation in raising power plant. Recommended for 50 to 60 feet with four and one-quarter inch equipment. Under favorable conditions it is being used to greater depths and can be used with six-inch equipment.

PARIS MANUFACTURING COMPANY

PARIS, ILLINOIS

THE BEST STEEL Costs No More

The performance of the drill steel has a lot to do with your costs on a rock job. While there still are contractors who order just "drill steel," far more have learned to rely on Bethlehem Hollow. Their experience has shown them it will stay on the job longer. They order it by name . . . Bethlehem Hollow.

- ★ Bethlehem Hollow is uniform in physical properties.
- ★ It gives tough shanks, sharp bits, and long-wearing threads when you use detachable bits.
- ★ Its wide quenching range means easy heat-treatment for the right degree of hardness and wear-resistance.
- ★ The center hole is smooth and true.
- ★ Best of all, Bethlehem Hollow stays on the job longer.

Immediate delivery of standard sizes from our mill or your nearest supplier.

BETHLEHEM STEEL COMPANY, BETHLEHEM, PA.

On the Pacific Coast Bethlehem products are sold by
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BETHLEHEM STEEL

BETHLEHEM HOLLOW DRILL STEEL

One of 8 LINK-BELT SPEEDER SHOVEL-CRANES

TURNING IN PROFITS FOR CAMPANELLA & CARDI, PROVIDENCE, R. I.

REASONS ENOUGH *for* REPEAT PURCHASES

Why do so many owners repeat on Link-Belt Speeders? Run one and you'll know. Engineered to include features of advanced, proven design, which make for more positive operation, sensitive control, easy access for attention, lubrication, etc., rugged construction for strength, durability and trouble-free operation. As a specific example, the Independent Chain Crowd, on Shovels and Speed-O-Matic hydraulic controls.

And back of every Link-Belt Speeder is a distributor organization, with complete stocks of genuine Link-Belt Speeder parts and crews of factory trained men specializing in the proper methods of keeping Link-Belt Speeders in money-making condition.

Check with the nearest Link-Belt Speeder distributor on your needs . . . he'll show you a machine to meet them!

SPEED-O-MATIC CONTROL

"Speed-O-Matic" hydraulic control permanently eliminates all "lost motion" — actuates clutches faster and more smoothly. Operators will tell you the "Speed-O-Matic" control relieves manual effort and there is little or no fatigue after a good day's work. Get the facts today—find out how you, too, can greatly increase your output.

11.407

LINK-BELT SPEEDER

LINK-BELT SPEEDER CORPORATION, CEDAR RAPIDS, IOWA

Builders of the Most Complete Line of SHOVELS-CRANES-DRAGLINES

RICE PUMPS *Have Everything* for Dependable Pump Performance!

Every RICE PUMP carries an A.G.C. Rating Plate.

RICE self-priming centrifugal pumps embody proven developments in pump design . . . features that set high standards in centrifugal pump performance:

- **AUTOMATIC PRIMING** — simply fill pump body and start engine. Pump primes automatically thereafter.
- **DIRECT LINE FLOW** — liquid flows through suction opening to impeller in direct line. Large openings, no sharp turns, minimum friction.
- **SUCTION CHECK VALVE BUILT-IN** — holds liquid in pump for re-priming. No foot valve needed in hose.
- **SELF-LUBRICATED SHAFT SEAL** — Biggest improvement in pump seals in a decade. Entire seal enclosed in welded, pressed steel cartridge. Quickly and easily replaced.
- **NON-CLOGGING IMPELLER and WEAR-PLATE** — Rice Pump impellers are of the open type; handle liquids with a high percentage of solids. Hardened steel wear-plate and impeller replacable when worn.

Write for New Illustrated Bulletin on 2", 7M and 10M models, the two most popular sizes of centrifugal pumps for the construction and oil field industries.

RICE PUMP & MACHINE CO.
Division of Milwaukee Chaplet & Mfg. Co.
1053 S. 40th St., Milwaukee 4, Wis.

RICE — *Self-Priming* CENTRIFUGAL PUMPS

MASTER COST-SAVING EQUIPMENT—FOR IMMEDIATE DELIVERY

Gas or Electric Concrete Vibrators (Catalog No. 689)

Hand Tools for operating from all Master Vibrators and BIG-3 (Catalog No. 683)

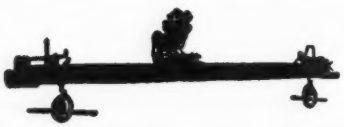
BIG-3 for Generation, Tool Operation and Concrete Vibration (Catalog No. 687)

Portable Gas-Electric Generator Plants. Sizes 500 to 17000 Watts (Catalog No. 594)

General Purpose Floodlights

"Power-Blow" Electric Hammer and Spade (Catalog No. 688)

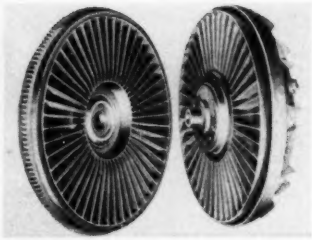
Gas or Electric Back-Fill Tampers (Catalog No. 699)



Vibratory Concrete Finishing Screed. Sizes 6' to 36' (Catalog No. 596)

"Turn-A-Trowel" for trowelling concrete Sizes 48" or 34" (Catalog No. 685)

Send for illustrated catalog on any item to
MASTER VIBRATOR COMPANY
DAYTON 1, OHIO



FLUID COUPLING—Gyrol fluid coupling, complete with clutch, clutch housing and either a three- or a four-speed transmission, is now available on certain Chrysler industrial engines. Coupling provides safety cushion between source of power and the load, prevents shock load to equipment and engine stalling. Damage encountered in operations such as a ditching machine hitting a large water pipe or a power shovel striking a heavy rock is eliminated.—**Industrial Engines Division, Chrysler Corp., Detroit, Mich.**

ALUMINUM JACK SUPPORT—Weighing only 8¾lb., Simplex aluminum jack support is designed to replace wooden wedge supports and has a two-way upright or inverted use. Recommended for use in combination with Simplex speed journal jacks. Journal jacks are suitable for inspecting and renewing railway journal brasses, for bridge builders, tank and structural steel builders, ship builders and in other industries where powerful jacks of low height are required.—**Templeton, Kenly & Co., 1029 S. Central Ave., Chicago 44, Ill.**

You name it *

* . . . and we'll do it. The Hermitage organization is geared for service that not only is friendly and obliging, but quick and efficient, too.

Hermitage Portland Cement Company

AMERICAN TRUST BUILDING • NASHVILLE 3, TENNESSEE

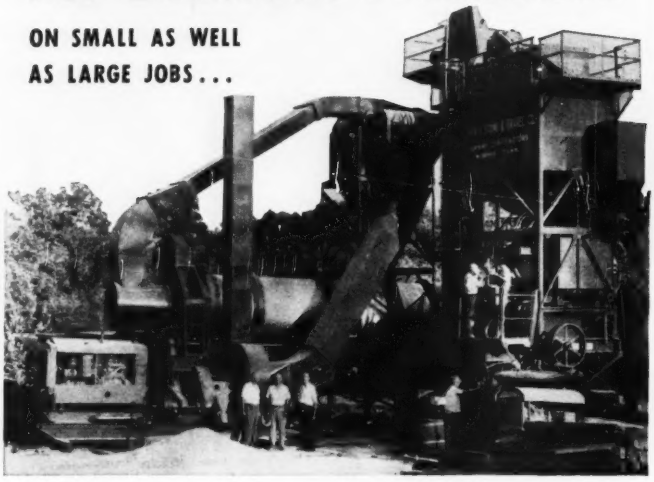
PORTLAND—HIGH EARLY STRENGTH—AIR ENTRAINING—MASONRY

DIESEL-POWERED TRUCKS—Two new diesel-powered trucks, rated at 31,500 and 35,000 lb., respectively, are available in wheelbases ranging from 155 to 215 in. Power plant is new Cummins diesel which develops 165 hp. at 1800 rpm. Engine has 5⅛-in. bore, 6-in. stroke and a displacement of 743 cu.in. Other engine features include new sleeves, pistons and head gaskets. New, large air cleaner is mounted on outside. Clutch is a 15-in. single plate dry disk type. Transmissions of both models are of the five forward speed type with either direct in fifth or overdrive fifth speed.—**International Harvester Co., 180 N. Michigan Ave., Chicago 1, Ill.**

NEW SWING CLUTCH—Furnished as standard equipment for swinging and traveling on American locomotive cranes. New design makes outside band type clutch more desirable as it overcomes the problem previously encountered of keeping band perfectly round and enabling its full surface to contact the drum. This has been done by using a double tandem clutch which consists of two half bands rather than one full band. Each half band is actuated by separate air cylinder, both air cylinders being controlled by a single valve. With half bands it is a simple matter to hold proper shape during installation and keep entire band surface in contact with drum, thus avoiding high spots and jerky operation. New clutch is available as replacement of many types of American locomotive cranes now in service.—**American Hoist & Derrick Co., 63 S. Robert St., St. Paul 1, Minn.**

For Efficient Production

ON SMALL AS WELL AS LARGE JOBS...



H&B Model PA Portable Asphalt Plants

MOTO-PAVER

The complete mixing and paving machine for mixed-in-place work. Write for Bulletin MP-47.

Shown above is the Hetherington & Berner PA-30 hot mix plant recently delivered to Memphis Stone & Gravel Co., Highway Contractors, Memphis, Tenn. These PA plants are designed to give efficient production on small as well as large jobs—under a wide variety of operating conditions.

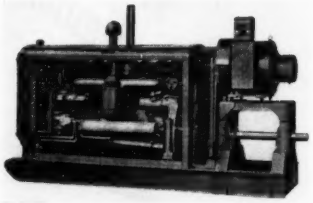
PA plants may be driven with individual motors or from one main power unit for the tower and one for the dryer, using gasoline, diesel, diesel electric or electric power. They are easily portable by truck. Low overall height is maintained by using a flat screen, and can be further reduced by use of a depressed driveway. Write for Bulletin P-46.

HETHERINGTON & BERNER INC.

735 Kentucky Avenue, Indianapolis 7, Indiana

H&B Builds Portable and Stationary Asphalt Plants of All Types, Sizes and Capacities

CRANE-EXCAVATOR—Newly designed 1¼-cu.yd. excavator and material handling machine is available in three models, including shovel, dragline, clamshell, crane, or hoe, with all front-end attachments interchangeable. Improvements include new type crawler unit with each tread belt independently controlled and the addition of new hook rollers. Type 72 machine is equipped with air control. Air-cushion clutches apply metered air pressure to working parts smoothly and evenly.—**Osgood Co., Marion, Ohio.**



DIESEL POWER UNIT—"Packaged" diesel power unit is capable of providing both electricity and mechanical driving power simultaneously. Two models are available rated at 135 hp. and 150 hp., respectively. Both models are equipped with 50-kw. generators. New power plant is called "Mech-Elec" unit. Generator can be operated without engaging mechanical drive.—**Murphy Diesel Co., Milwaukee 14, Wis.**

How far between your engine overhauls?

Engine overhauls are few and far between for the Consumer Sales Agency fleet, Moline, Illinois. Its International K-11 trucks travel from 100,000 to 130,000 miles before any mechanical service work, requiring removal of engine heads or dropping of pans, is needed.

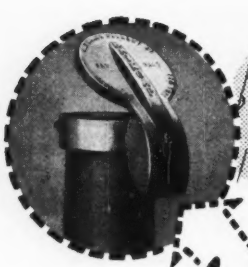
Operators of this fleet credit the plus qualities of Stanolube HD Motor Oil for the fine performance of their heavy-duty trucks. They report that engine parts have lasted longer because they have been kept clean and protected against wear.

Stanolube HD delivers the lubrication performance that will keep your fleet units rolling longer between overhauls. This heavy-duty lubricant owes its superiority to the combination of effective oxidation-resistant and detergent additives with solvent-extracted base stocks of the highest quality. Extra protection that cannot be obtained from straight mineral oils is thus afforded by Stanolube HD.

Consider the experience of the Consumer Sales Agency fleet with Stanolube HD. Why not let the unusual performance of these trucks point the way to lower maintenance costs for your fleet? Standard Oil Company (Indiana), 910 South Michigan Avenue, Chicago 80, Ill.

Stanolube HD Motor Oil

STANDARD OIL COMPANY (INDIANA) STANDARD



RAINCAP

New!

THE CAP THAT DOES NOT FORGET TO CLOSE

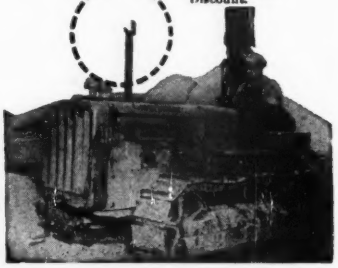
Completely automatic — the "RAIN-CAP" is counterbalanced to open when the tractor starts and close when it stops. Rust proof—made of cast aluminum—with bronze bushing—can be installed in two minutes. F.O.B. Waterloo, Iowa.

- Immediate delivery
- Liberal Dealer Discount.

STOPS MOISTURE FROM FALLING INTO TRACTOR EXHAUST

No.	O.D. Exhaust	Retail
1	2⅛"	$1.90
2	2⅜"	1.90
3	2¾"	1.90
5	1⅜"	1.90
55	2"	1.90
5x	1¾"	1.90
6	1½"	1.90
66	1⅜"	1.90
7	2½"	1.90
8	3"	2.50
9	3⅛"	2.50
10	3¼"	2.50
11	3½"	2.75
115	3¾"	3.00
12	4"	3.00
123	4⅛"	3.00
125	4¼"	3.00
14	4½"	3.00

Write Dept. CM.



WATERLOO FOUNDRY CO., WATERLOO, IOWA

GET TWICE THE LIFE WITH CAINE

CORR-PLATE

STEEL PILING!

1. STANDARD

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Now Caine Corr-Plate Steel can be ordered in a new steel alloy which gives it 100% greater corrosion resistance. This practically doubles the service life of your piling. Tests also prove this new alloy to be 25% stronger, giving you equal strength in a 25% lighter piling.

Caine Corr-Plate Steel Piling can be used over and over again, thus distributing its cost over a great many jobs. It's nestable, easy to drive, and watertight.

The world over, Caine Corr-Plate Steel Piling is being used for Foundations, Dams, Retaining Walls, Docks, Levees, Bulkheads, Sewers, Disposal Plants and hundreds of other jobs.

Now, More Than Ever Before... STRONGEST Per Pound Weight

2894

CAINE STEEL COMPANY

Steel Piling Division, 1820 N. Central Avenue, Chicago 39, Illinois

New PUBLICATIONS From MANUFACTURERS

The catalogs and bulletins reviewed below will keep you posted on latest developments in construction equipment and materials available for your use

APRON AND RECIPROCATING FEEDERS—8-p. bulletin gives detailed descriptions and specifications on the complete line of Cedarapids feeders, showing their operation and use in typical installation photos and diagrams. Feeders for use with all types of material handling and bituminous mixing plants are included. Apron type feeders for use with crushers, or under bins to feed on to a conveyor—in a range of sizes to handle any size feed, including big rock. Some will handle anything fed by large shovels, draglines or dump-type units from a ramp.—**Iowa Manufacturing Co., Cedar Rapids, Iowa.**

BITUMINOUS PAVER—A catalog describes the Model BP-5 Jaeger bituminous paver which is adjustable while in motion to any width from 9 to 12½ ft.; and quickly adjustable for lesser widths down to 5 ft. 8 in. It lays any material to exact thickness and uniform desired density. It also matches and paves flush to adjacent course, curb or gutter.—**The Jaeger Machine Co., Columbus 16, Ohio.**

INSULATED PIPING—A booklet, "Engineering Data for Underground Steam Distribution, Section 480-2", deals with such subjects as the layout of the route, methods of estimating steam loads, steam flow charts and tables, properties of steel pipe, properties of saturated steam, and other similar related topics. "Typical Engineering Drawings—Section 480-3" reproduces actual drawings used in a wide variety of insulated piping installations. These include industrial, educational, housing, hospital, public utilities, railroad and governmental projects. Both booklets are in 8½x11 in. format for easy handling and filing.—**The Ric-wil Co., Dept. A23, Union Commerce Bldg., Cleveland, Ohio.**

WINDOW PLANNING—A booklet points out that proper house fenestration should give abundant daylight, ample fresh air, good visibility, weather protection and safeguards against insects and intruders.—**Detroit Steel Products Co., 3159 Griffin St., Detroit 11, Mich.**

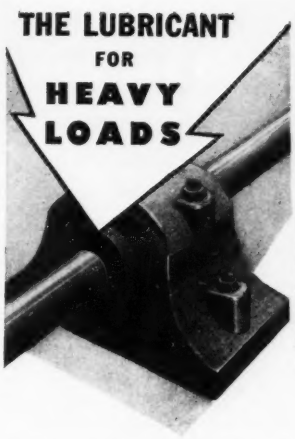
WELDED BRIDGES—A 16-p. reprint offers a review of welded bridges constructed in the United States, Canada and various foreign countries during the last twelve years and of practices in specifying steel material, details of design and methods of construction. Also included is a review of the results of some German fatigue tests of welded beams, fatigue fractures in girders and stringers of riveted railway bridges and the repairs that are made by welding. Eighteen photographs, two diagrams and four tables augment the article itself.—**Air Reduction Sales Co., 60 East 42 St., New York 17, N. Y.**

EXPANDED METAL—New 8-p. bulletin gives engineering data including load deflection, air flow comparison, and free openings of both standard and flattened mesh types of expanded steel. Also included is a list of sizes with dimensions and weights, illustrations of mesh and typical applications, and data on expanded metal grating.—**Joseph T. Ryerson & Son, Inc., Box 8000-A, Chicago 80, Ill.**

NEW C TOURNAPULL—Information on the new electric-control C Tournapull is given in a broadside, TP-167. In addition to presenting specifications on this 150 hp. 16-ton capacity rig, the broadside features action pictures showing this Tournapull working in mud, in tough sand, on steep grades, and making job-to-job moves over the highway. It also describes main design features.—**R. G. LeTourneau, Inc., Peoria, Ill.**

PACKAGED PIPE SYSTEM—Bulletin tells of a novel idea—the "Speed-lay" pipe system, a plan for simple, fast immediate installation of pipe line for general road and tunnel contractors, to be rented for temporary use or purchased for permanent use. It is a combination of pipe and Victaulic flexible couplings particularly suitable for compressed air, water and other services. It comes in a package all ready for use.—**Albert Pipe Supply Co., Inc., Berry and North 13th St., Brooklyn 11, New York.**

HYDRAULIC DITCH DIGGING—An interesting booklet discusses a new idea in ditch digging. Solely by compression, it is claimed that this patented machine will dig a trench 36-in. deep and 14-in. wide without removing any earth. The machine weighs 3,200 lb., yet it can develop a pressure of about 300 tons on each side. It is a moving self-propelled wedge which can develop 40 to 60 psi. —**Tweeten Ditching Machine Co., Forest City, Iowa.**



LUBRIPLATE Lubricants are a paradox. They not only possess enormous film strength to withstand the heaviest loads but they function with minimum drag, hence conserve power. The "stay-put" quality of these unique lubricants means less frequent application and less lubricant consumption. Yes, they are most economical, too!

Write for a copy of "The LUBRIPLATE FILM" written especially for your industry.

Important TO HEALTH AND EFFICIENCY

COOL, PURE DRINKING WATER ...ON THE JOB

Dobbins Portable Sanitary Drinking Fountain

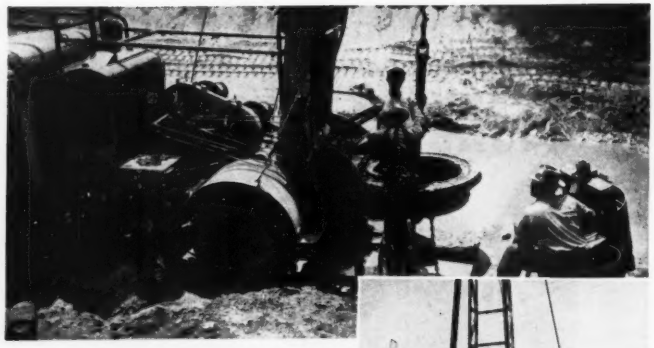
Assures an adequate supply of cool, pure drinking water for workers *everywhere*—in factory or field. Protects their health, and keeps them on the job. Fountain has inner water container of stainless steel. Four gallon tank is fully insulated. Constant air pressure for instant flow of water is furnished by a few strokes of the pump at widely spaced intervals. *Operates at the press of a button,* like any bubbler drinking fountain. May be easily carried from place to place by shoulder strap, or mounted on truck, tractor or locomotive.

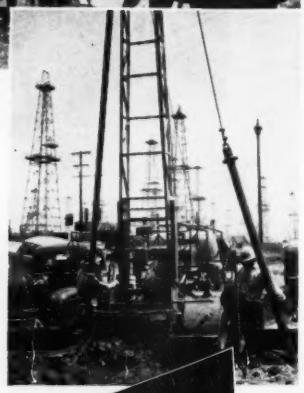
Banishes germ-spreading cups, dippers, pails.

DOBBINS MANUFACTURING CO.
DEPARTMENT 552 ELKHART, INDIANA

Dobbins Superbilt PORTABLE DRINKING FOUNTAIN

WRITE TODAY FOR FREE DESCRIPTIVE FOLDER





SOIL TESTING WITH THE

CALIFORNIA EARTH BORING MACHINE

The California Earth Boring Machine is especially adapted to soil testing, because it is possible to drill the large diameter holes necessary and, through the use of a simple push-type sampler working on the secondary hoist line, to take out the uncontaminated samples to exactly determine the bearing values of formations.

A factory-trained sales engineer will soon be in your territory. Ask us to have him call and show, in your office, a full length, full color motion picture of the California Earth Boring Machine in operation in every field of bucket type drilling. He will confer with you on design of special equipment to meet your particular earth boring problems.

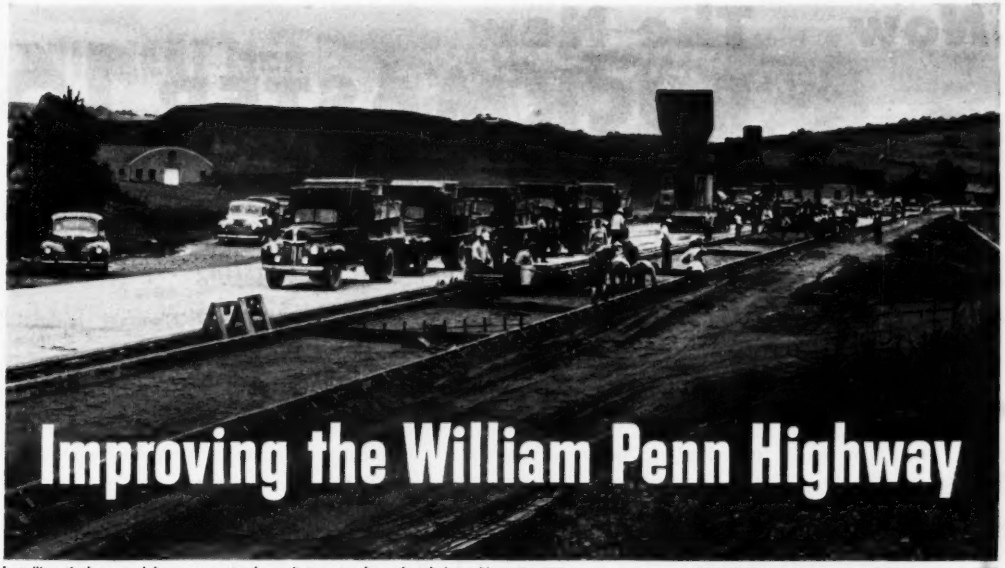
California Welding & Blacksmith Shop, Inc.
7222 East Slauson Avenue, Los Angeles 22, Calif.

SUSPENDED CEILING CONSTRUCTION—A 1949 catalog on suspended ceiling construction describes several recent developments useful in installing ceilings with or without acoustical materials. These developments include a new special zipper splice lock clip which holds adjoining ends of nailing channels in a rigid position and prevents bulges or depressions in the ceiling surface. Another important improvement is the innovation of the metal end lock strip which holds adjoining sheets of backerboards securely in place. This catalog illustrates how Nailock installations for acoustical ceilings are made in only three operations. It includes specifications and a listing of distributors.—**Nailock Steel Division, The Sanymetal Products Co., Inc., 1705 Urbana Road, Cleveland 12, Ohio.**

STAINLESS TUBE FITTING—Sta-Union, a threadless stronger and tighter union for joining stainless steel tubing, is described in an illustrated sheet. This product makes possible the use of light or heavy gage tubing in place of pipe, thus reducing both weight and cost. This improved fitting is recommended for working pressures up to 150 psi.—**Steel Products Corp., 52 Vanderbilt Ave., New York 17, N. Y.**

FOUR-FUEL ENGINES—Industrial engines and equipment for their operation on gasoline, kerosene, distillate or natural gas in a wide variety of applications, are described and shown in a new 12-p. catalog covering four carburetor-type engines. Models presented are available as stripped engines or with job-determined equipment combinations up to complete power unit. Maximum working horsepower ratings range from 24 to 55 for power units complete with fan, radiator, air cleaner, governor, when operating on gasoline.—**International Harvester Co., 180 N. Michigan Ave., Chicago 1, Ill.**

VIBRATING SCREEN—A positive eccentric vibrating screen is described in a 16-p., 2-color book giving specifications and dimensions for 60 sizes of single-, double- and triple-deck units. Chief features of the new design are the hub-mounted bearings which are located outside the screen body, straight shaft design with eccentricity achieved by means of patented hubs, three-point suspension or support. Among the advantages claimed are sharper sizing action, higher capacity, lower first cost, reduced headroom, light substructure requirements, easier installation.—**Lippmann Engineering Works, 4603 W. Mitchell St., Milwaukee 14, Wis.**



Improving the William Penn Highway

Installing tie-bars and keyway as trucks wait turn to dump batch into skip.

Left to right: Bruno Ferrari and John C. Slate, both of Latrobe Road Construction Co., with T. J. McKay, senior construction engineer, Pennsylvania Department of Highways.

As part of its far-reaching road-modernization program, the Pennsylvania Department of Highways recently authorized five miles of relocation on the William Penn Highway, at New Alexandria, Pa. The new road varies in width from two to four lanes. Included in its construction were two bridges and seven culverts. Contractor: Latrobe Road Construction Co., Latrobe, Pa. Steel piling, bar mats, dowel units, and cable guard rail were supplied by Bethlehem.

BETHLEHEM STEEL COMPANY, BETHLEHEM, PA.

On the Pacific Coast Bethlehem products are sold by
Bethlehem Pacific Coast Steel Corporation
Export Distributor: Bethlehem Steel Export Corporation

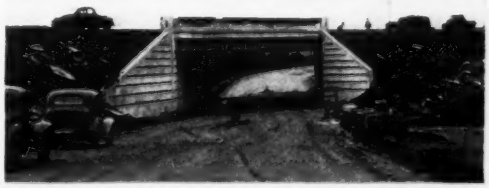
STEEL FOR HIGHWAYS

Dowel Units • Reinforcing Bars • Bar Mats • Guard Rail
Guard Rail Posts • Wire Rope and Strand • Pipe
Hollow Drill Steel • Spikes • Bolts and Nuts
Timber Bridge Hardware • Tie-Rods
Sheet- and H-Piling • Fabricated Structural Steel

BETHLEHEM STEEL

—And a big smile for the photographer! Willing hands lift Bethlehem Hinged Bar Mat at batching plant stockpile.

With Bethlehem Hinged Bar Mat in place, screw spreader goes to work on top course. Job used 300 tons of mats.



This reinforced concrete bridge has span of more than 53 ft, and will carry new highway over secondary road.

Now...The New ROCKMASTER 16 Blasting System

Less Bark . . . More Bite

Greatest Improvement in Blasting Since Atlas Pioneered Rockmaster— the original milli-second blasting system!

The *new* ROCKMASTER 16 Blasting System has been under trial for almost two years. It is now ready to go into action in pits, quarries, underground work, construction jobs . . . a basic improvement over the sensational original Atlas Rockmaster system.

ROCKMASTER 16 brings you a *sixteen-stage* milli-second delay system! It gives you *all* the advantages of the original ROCKMASTER three-delay system PLUS new and even better control over breakage, throw, noise, vibration . . . sufficient milli-second delays to fill out large underground rounds and shots requiring a large number of delays.

Here are just a few of the many outstanding advantages of the new ROCKMASTER 16 *Blasting System demonstrated in actual field work.*

BETTER BREAKAGE means cheaper loading and milling . . . less secondary shooting. Wide choice of milli-second delays gives you improved control over material size.

CONTROLS BACK-BREAK . . . SAVES COAL IN STRIPPING. *Sixteen* periods give you long or short milli-second delays as needed for different formations. Explosive energy is directed toward burden—not wasted in back-break or in degradation of coal.

INCREASES MINE SAFETY. Less vibration means less strain on timbers and roof, less dust, quicker return to face. *Sixteen* delay periods fire in 550 milli-seconds!

REGULATES THROW. Gives high rock piles at the face—or lower piles farther out. *Sixteen* ROCKMASTER periods give you remarkable control of throw.

MORE MATERIAL PER POUND OF EXPLOSIVES. More footage per round. Makes savings in dynamite, in drilling, or both.

FEWER COMPLAINTS ABOUT NOISE AND VIBRATION. ROCKMASTER 16 frequently cuts vibration more than 60%—even when more dynamite is used!

ROCKMASTER 16 TIMINGS

Rockmaster No.	Avg. Time of Each Delay from Zero (milli-seconds)
0 (zero)	0 (inst.)
1	8
2	25
3	50
4	75
5	100
6	125
7	150
8	175
9	200
10	250
11	300
12	350
13	400
14	450
15	500
16	550

ROCKMASTER: Reg. U. S. Pat. Off.

ATLAS EXPLOSIVES *"Everything for Blasting"*

CHEMICALS ATLAS EXPLOSIVES

ATLAS POWDER COMPANY, Wilmington 99, Del. • *Offices in principal cities* • *Cable Address—Atpowco*

EQUIPMENT MEN

and Their Companies

Current developments among manufacturers relating to expansion of services, shifts in personnel, and other changes, include the following:

Sales

Caterpillar Tractor Co.—Robert J. Loskill is assistant manager in the governmental sales division.

Fuller Mfg. Co.—J. A. Packard is manager of original equipment sales of the transmission division.

U. S. Rubber Co.—The following are new sales managers of the electrical wire and cable department: C. W. Short, Boston, Mass.; J. D. Drohan, New York City; H. J. Cluver, Philadelphia and Baltimore; C. C. Hronek, Atlanta, Birmingham and New Orleans; E. W. Renfree, Detroit, Cleveland and Pittsburgh; G. E. Hubrig, Chicago, Milwaukee and Minneapolis; L. E. Dickinson, St. Louis, Cincinnati and Indianapolis; A. B. Gangwer, Kansas City, Tulsa, Omaha and Denver; R. S. Keith, Dallas and Houston, and L. M. Guibara, Los Angeles, San Francisco, Portland, Ore., Seattle, and Salt Lake City. F. P. Combier is sales manager and R. C. Cassidy, chief engineer for Uskon electrical heating panels at New York.

Gar Wood Industries, Inc.—Edward B. Hill, former general sales manager has been appointed vice-president in charge of sales.

Standard Gypsum Co.—Dick Crowle has been transferred to Sacramento and Jack Feely was appointed to cover San Francisco and Peninsula sales.

International Harvester Co.—L. A. Hanson, former supervisor of parts and service merchandising, motor truck division, has been appointed manager of the east-central region. J. C. Bulleit succeeds Mr. Hanson. W. M. Parrish, assistant sales manager, manufacturers' sales, industrial power division, has retired after more than 24 years.

Distributors

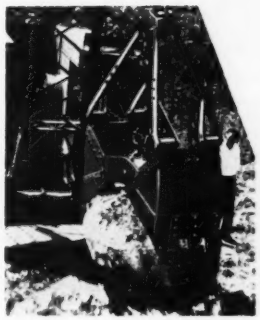
C. R. Jahn Co.—Contractors Syracuse Co., Inc., Syracuse, N. Y., and Contractors Sales Co., Inc., Troy, N. Y., are exclusive dealers for heavy-duty low-bed trailers.

Diamond Chain Co., Inc.—The following distributors have been added: Apex Power Equipment Co., 4407 W. 26th St., and Ray M. Ring Co., 1234 W. Washington Blvd., both of

(Continued on page 154)

CLOSING POWER *Plus* WHEN AN OWEN BUCKET *Clamps Down*

OWEN CLAMSHELL BUCKETS INSURE A BIGGER DAY'S WORK



It's the "Plus" features in a product that contribute largely to outstanding performance and build user satisfaction and profits.

Relax and swing an Owen from your boom. Closing Power PLUS is there when required for licking the toughest excavating jobs which will confront you.

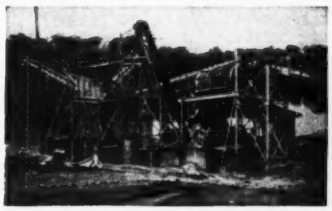
THE OWEN BUCKET CO. 6020 Breakwater Ave., Cleveland, O.

BRANCHES: PHILADELPHIA • CHICAGO • BERKELEY, CALIF.

A MOUTHFUL AT EVERY BITE

Crush Your Own Rock

Reliance EQUIPS *your* JOBS



RELIANCE PRODUCTS

Rock Crushers, Bucket Elevators, Revolving Screens, Storage Bins, Pulverizers, Chip Spreaders, Heating Kettles, Bin Gates, Feeders, Belt Conveyors, Grizzlies, Air Separators, Sand & Gravel Spreaders, Wash Boxes.

Rather than face the delay and expense of rail or highway shipments of crushed stone, gravel and sand, *install your own plant* and save both time and money.

We'll gladly refer you to contractors who are making money and rushing their work with RELIANCE Equipment.

Write for the latest RELIANCE Bulletins.

Quality products still available at moderate cost.

UNIVERSAL ROAD MACHINERY CO.

Kingston, N. Y., U. S. A.

DISTRIBUTORS IN ALL PRINCIPAL CITIES OF U. S. A.

There's a Best Way to do Everything

ASSOCIATED GENERAL CONTRACTORS OF AMERICA — AGC — REG. U.S. PAT. OFF.

20 M (20,000 G.P.H.)

THIS PUMP COMPLIES WITH A.G.C. STANDARDS FOR SELF PRIMING CENTRIFUGAL PUMPS

DRIVE a car blindfolded—unthinkable! Then why drive headlong into possible disappointment in buying a pump? Keep your eyes peeled for the A. G. C. Rating Plate on the pump you buy. It assures that the pump meets these new and higher standards for performance . . . means greater output at higher heads . . . means more, much more for your money. Remember, it's the best way to choose a pump. And only the manufacturers listed below make pumps carrying this A. G. C. Rating Plate.

SEND FOR THIS USER'S MANUAL

Forty pages packed with useful information. Answers all questions on pump application — the do's and dont's of pump operation. Write any of the companies listed below:

AGC — CB

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Munsey Building, Washington 4, D. C.

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THE GORMAN-RUPP CO. Mansfield, Ohio	RICE PUMP & MACHINE CO. Milwaukee 4, Wisconsin	CARVER PUMP CO. Muscatine, Iowa
THE JAEGER MACHINE CO. Columbus, Ohio	STERLING MACHINERY CORP. Kansas City, Mo.	C. H. & E. MANUFACTURING CO. Milwaukee, Wisconsin
MARLOW PUMPS Ridgewood, N. J.	WORTHINGTON PUMP & MACH. CORP. Holyoke, Mass.	CHAIN BELT CO. Milwaukee, Wisconsin

(Continued from page 153)

Chicago; and W. F. McGraw & Co., 575 E. Milwaukee St., Detroit, Mich.

Blaw-Knox Co. and Foote Co.—These two companies have appointed the following exclusive distributors: LeRoi-Rix Machinery Co., 6403 E. Slauson Avenue, Los Angeles, Calif.; Western Equipment Co., 4009 Fairview Avenue, Boise, Idaho; Western Equipment Co. branches in Idaho Falls, Idaho (P.O. Box 96) and Spokane, Wash. (P.O. Box 2196); R. B. Wing & Son Corp., 384-386 Broadway, Albany, N. Y.; and Laurion Equipment, Ltd., 1801 St. Patrick Street, Montreal, Que.

Koehring Co.—Western Construction Equipment Co., Billings and Missoula, Mont., has been appointed distributor for Parsons Truckliners in Montana and northern Wyoming, and Mitchell Distributing Co., Spruce Pine and Raleigh, N. C., will handle the complete line of heavy-duty construction equipment and products of the subsidiaries—C. S. Johnson, Kwik-Mix and Parsons.

Bucyrus-Erie Co.—Merrill-Brose Co., San Francisco, is a new distributor.

Personalities

Blaw-Knox Co.—H. C. Peters is technical consultant of construction equipment of the Blaw-Knox division.

The Euclid Road Machinery Co.—J. E. Ehlert is district manager of the northeast territory.

The Timken Roller Bearing Co.—R. G. Harmon has become district manager of the industrial and steel tube divisions at Birmingham, Ala.

Nelson Steel Welding Division of Morton Gregory Corp. — V. A. Schmidt will represent this division as field engineer in northwestern and central Ohio and northeastern Indiana.

Ceco Steel Products Corp.—C. Foster Brown, Jr., assistant to the president, has been elected a director.

Miscellany

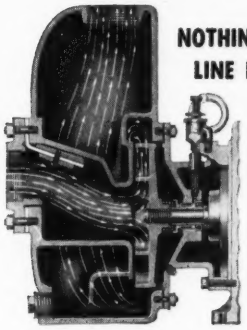
Kennametal, Inc.—New York office has been moved to 11 W. 42nd St. L. D. Morton is acting manager there.

Caterpillar Tractor Co.—Construction of a new parts depot in Indianapolis, Ind., is being started by this company.

American Steel & Wire Co.—A research division in the industrial relations department has been established. It is headed by C. J. Forbes.

General Motor Corp. Truck & Coach Division—This corporation has announced list price reductions on all light-duty commercial vehicles from $100 to $150.

BARNES PUMPS give me 33,000 for 1 odds . . .



NOTHING BEATS A STRAIGHT LINE FOR GETTING THERE

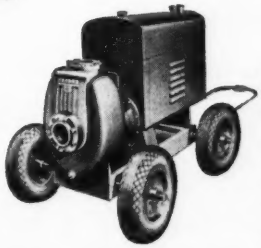
See how the suction of Barnes Pumps is direct-in-line with the impeller? This means less friction loss — more water for your pumping dollar every time with Barnes "33,000 for 1" Pumps.

THAT'S RIGHT! Not 1,000 for 1! Not 10,000 for 1! But 33,000 gallons of water pumped for 1 gallon of gas used! That's filling or emptying 4⅛ tank cars on just 1 gallon of fuel. There's no gambling on odds like these. And this amazing economy is yours when you use Barnes Automatic Centrifugals — the "33,000 for 1" Pumps.

STREAMLUXE Barnes LINE

FROM 3,000 TO 90,000 G. P. H.

A choice for every need! Barnes Complete line ranges from 3,000 to 90,000 G.P.H. in capacities. From 3-in. to 6-in. suction and discharge diameters. Buy the Best —Buy Barnes.



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MANSFIELD, OHIO

MAIL THIS COUPON TODAY!

Barnes Manufacturing Co.
607 North Main Street
Mansfield, Ohio

Please send me descriptive literature on pumps marked below:

____Gasoline-engine driven automatic centrifugals
____Universal-belt driven automatic centrifugals
____Diaphragm Pumps

Name _____
Firm _____
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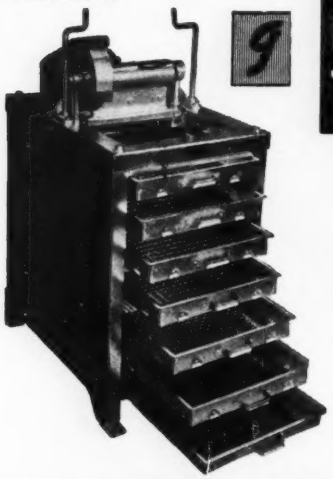
*FOR ACCURATE, FAST, COMPLETE CONTROL

An attachment for handling 8 inch diameter standard testing sieves provides uniform and exceptionally rapid results on sand samples.



GILSON Mechanical Testing Screen

Whether it be field or laboratory testing, accurate proportioning of coarse and fine aggregates for all types of construction is essential.

You can definitely control the accuracy of your mixes and the accuracy of your production of aggregates on the job by using a Gilson Testing Screen.

Specify a GILSON Testing Screen for fast, accurate sizing of coarse and fines from 4" to 200 mesh. It handles samples up to one cubic foot.

GILSON SCREEN CO. BOX 186 MERCER, PENNA.

Light and Power for Off-highline locations

There's no need to let a good business opportunity get away from you because highline electric service is not available. You can supply as much power as you need with a Fairbanks-Morse generating set! There's a model for every need—from 350 to 35,000 watts capacities for A.C., D.C., or A.C.-D.C. current. Available with manual, automatic or remote controls. For full facts, see your Fairbanks-Morse dealer or mail the coupon today.

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Gentlemen: Please send me your folder about Fairbanks-Morse generating sets.

Name.....

Address.....RD.....

City.....State.....

ARMSTRONG CONSTRUCTION TOOLS

ARMSTRONG DROP FORGED WRENCHES

All ARMSTRONG Construction and Structural Wrenches are drop forged from special analysis tool steel, and heat treated. Openings are accurately machined, handles are long and tapered for ease in lining up bolt holes.

"Construction" Wrenches in Chrome-Vanadium or Carbon Steel—with 15°, 45° or 90° angle heads with openings of from 7/16" to 2".

"Structural" Wrenches with straight heads and off-set handles, in Chrome-Vanadium or Carbon Steel in the sizes listed above.

"Box Socket Structural Wrenches, in Chrome-Vanadium only, with double hexagonal (12 point) openings from 1 1/16" to 2 3/16". (Recommended wherever an open end wrench is not required because of these safety convenience features. *Write for Catalog*

S-48 just released.

Armstrong Bros. Tool Co.
5234 W. Armstrong Ave., Chicago 30, Ill.

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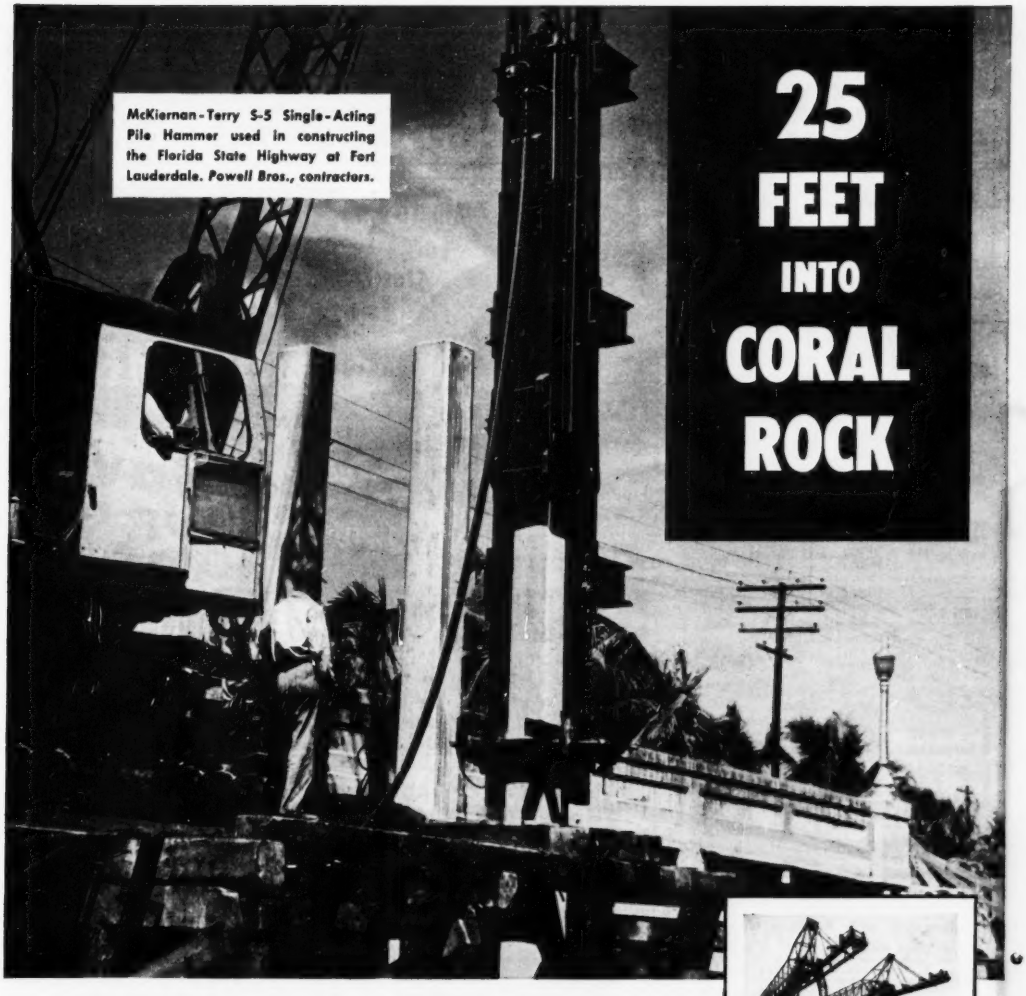

McKiernan-Terry S-5 Single-Acting Pile Hammer used in constructing the Florida State Highway at Fort Lauderdale. *Powell Bros., contractors.*

25 FEET INTO CORAL ROCK

To drive 35-foot concrete piles, 16 inches square, 25 feet down into coral rock called for a highly dependable hammer. That is why the contractors used this McKiernan-Terry Single-Acting Pile Hammer, with striking energy of 16,250 foot-pounds per blow, for this Florida highway project.

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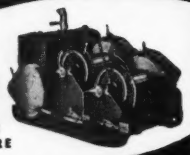

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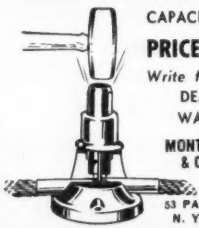

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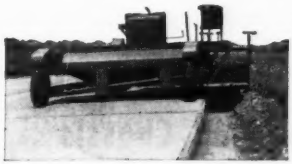

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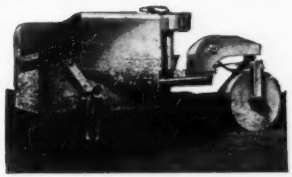

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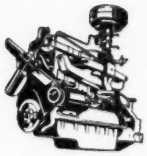

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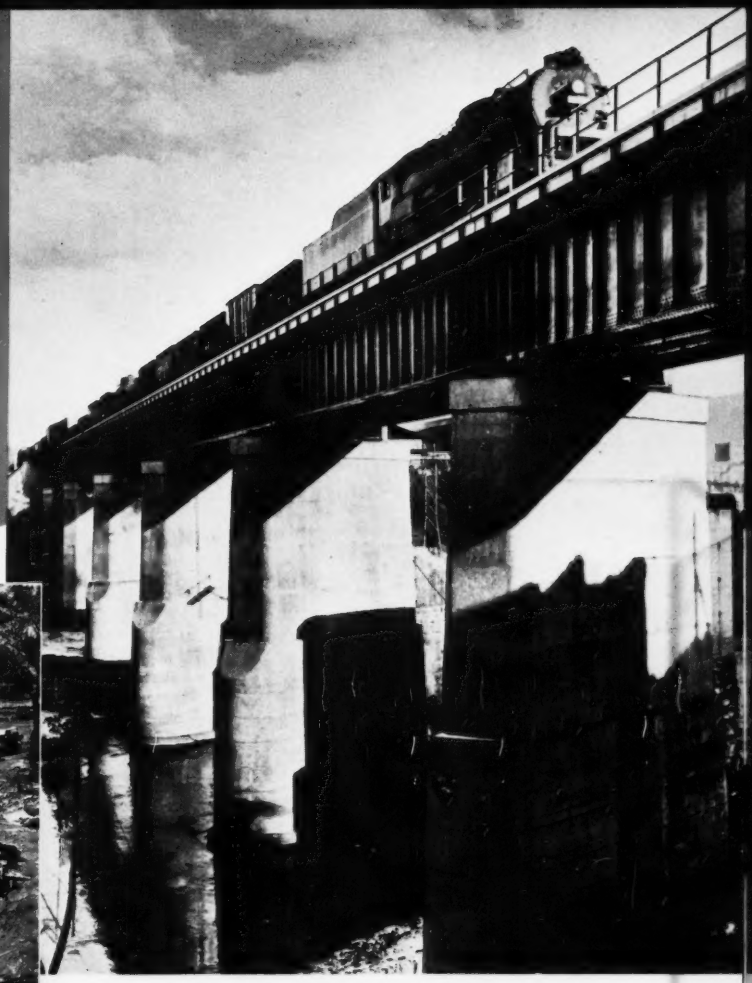

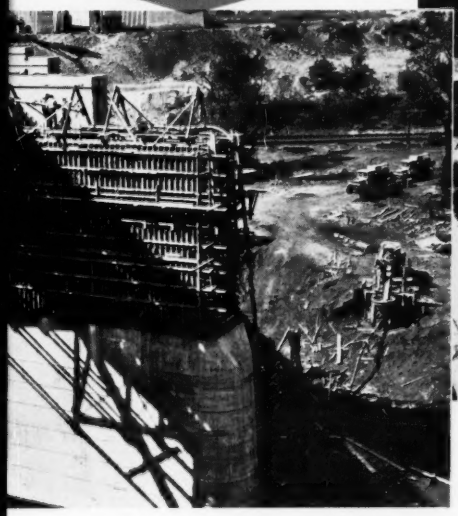

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Ask your nearby Worthington-Ransome Distributor about Blue Brute Pavers, Single and Dual Drum. Or, Bulletin 208 will bring you further facts proving *there's more worth in a Blue Brute.*

RS-1

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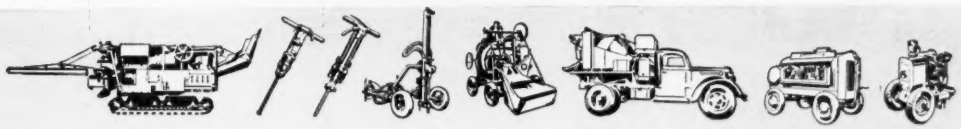

IF IT'S A CONSTRUCTION JOB, IT'S A BLUE BRUTE JOB